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## Removing the 'Fuel of Interest' from the 'Fire of Genius': Law and the Employee-Inventor, 1830-1930

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The manager's brains are under the workman's cap.

William "Big Bill" Haywood<sup>1</sup>

The workmen in each of these trades have had their knowledge handed down to them by word of mouth . . . . The ingenuity and experience of each generation . . . have without doubt handed over better methods to the next. This mass of rule-of-thumb or traditional knowledge may be said to be the principal asset or possession of every tradesman. . . . [The] foremen and superintendents know, better than any one

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<sup>1</sup> William D. Haywood and Frank Bohn, *Industrial Socialism* 25 (Charles H. Kerr ed no date). This quote is found in David Montgomery, *Workers' Control in America: Studies in the history of work, technology and labor struggles* 9 (Cambridge 1979). Haywood was a leader of the radical Western Federation of Miners and, later, a founder and leader of the Industrial Workers of the World ("Wobblies"), a radical national labor union in the early twentieth century. See generally Joseph R. Conlin, *Big Bill Haywood and the Radical Union Movement* (Syracuse 1969); Melvin Dubofsky, *"Big Bill" Haywood* (Manchester 1987).

else, that their own knowledge and personal skill falls far short of the combined knowledge and dexterity of all the workmen under them.

Frederick Winslow Taylor<sup>2</sup>

Employees develop knowledge at work that may be made more valuable to an employer if it is not shared with other firms. Employers want monopoly control over the products of their employees' human capital, and a variety of legal doctrines help them get it. Among these doctrines is the law governing ownership of patents.<sup>3</sup> Perhaps the most significant legal constraints on employees' freedom during and after an employment relationship are the restrictions on employees' ability to use for themselves or to sell to others the knowledge they acquired on the job. How employees and employers have used law in their struggle over ownership and control of economically valuable ideas is an important and little-explored chapter of the legal, social, and economic history of American labor and industrialization.

The modern law was forged in the crucible where patent law's egalitarianism collided with the hierarchical premises of the law of master and servant. The law of employee inventions is an unstable mixture of the two bodies of law, the former honoring the rights of the *inventor* as employee, the latter being skeptical of the rights of the *employee* as inventor. The democratic, free labor spirit of the patent system reflects its status as a foundation of American economic development and an icon of American freedom in the nineteenth century. As Abraham Lincoln famously observed, "In anciently inhabited countries, the dust of ages—a real downright old-fogyism—seems to settle upon, and smother the in-

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<sup>2</sup> Frederick Winslow Taylor, *The Principles of Scientific Management* 31-32 (Norton 1967) (emphasis removed).

<sup>3</sup> This Article is part of a larger work in progress that focuses on the entire body of law governing ownership of intellectual property in the context of the employment relationship, including trade secrets, covenants not to compete, and the various tort doctrines regulating unfair competition. This body of law restricts employees from marketing their skills to other employers. Works exploring the nineteenth century struggle between employers and employees include: Harlan M. Blake, *Employee Agreements Not to Compete*, 73 Harv L Rev 625, 629-46 (1960); Note, *Tortious Interference with Contractual Relations in the Nineteenth Century: The Transformation of Property, Contract, and Tort*, 93 Harv L Rev 1510 (1980); Lea S. VanderVelde, *The Gendered Origins of the Lumley Doctrine: Binding Men's Consciences and Women's Fidelity*, 101 Yale L J 775 (1992). Surprisingly, this is the first history of the law respecting ownership of the inventions of the employee-inventor. Jasper Silva Costa, *The Law of Inventing in Employment* (Central Book 1953), surveyed the law as it stood in the early 1950s, but did not delve much into its history.

tellec[t]s and energies of man."<sup>4</sup> But in America, he asserted, we had broken the "shackles" of the "slavery of mind" and had established "a habit of freedom of thought" that was necessary to the "discovery and production of new and useful things."<sup>5</sup> The patent law nourished this habit of free thought by allowing the ingenious to profit; it added "the fuel of *interest* to the *fire* of genius."<sup>6</sup>

Lincoln's view of patent law as the free labor ideology of the ingenious tinkerer may seem to be at odds with the hierarchical rules of master-servant law that applied at the time if the tinkerer happened to be someone's employee. To an extent surprising in light of the otherwise bleak legal status of nineteenth century employees, courts awarded employees property rights in their inventions. But, by the early twentieth century, the master-servant ideology had dampened the free labor spirit of the patent law. Thus, when Lincoln's words were written in stone above the portal to the U.S. Patent Office in 1932, the fuel of interest had been all but removed from the fire of the employee-inventor's genius.<sup>7</sup> As one critic complained in 1949, "Today it would be more correct to say that the patent system adds another instrument of control to the well-stocked arsenal of monopoly interests . . . [because] it is the corporations, not their scientists, that are the beneficiaries of patent privileges."<sup>8</sup> Another critic accused corporations of using patents to suppress competition rather than to encourage or reward invention.<sup>9</sup> These critics lamented the massive twentieth century shift of ownership of ideas from individuals to corporations; the change was partly accomplished by a shift in ownership from individual entrepreneur-inventors to corporate employers of inventors.<sup>10</sup>

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<sup>4</sup> Abraham Lincoln, *Second Lecture on Discoveries and Inventions* (Feb 11, 1859), in Roy P. Basler, ed, 3 *The Collected Works of Abraham Lincoln* 356, 363 (Rutgers 1953).

<sup>5</sup> Id.

<sup>6</sup> Id.

<sup>7</sup> This observation was made in David F. Noble, *America by Design: Science, Technology, and the Rise of Corporate Capitalism* 84 (Knopf 1977).

<sup>8</sup> Id.

<sup>9</sup> See id at 84-85. The overwhelming majority of patents issued today go to corporations. See Rights of Employed Inventors, Hearing on HR 4732 and HR 6635 before the House Subcommittee on Courts, Civil Liberties, and the Administration of Justice, 97th Cong, 2d Sess 1 (1982) (remarks of Rep Robert Kastenmeier), quoting Patent Office report stating that 84 percent of U.S. patents go to corporate assignees, "usually the employer of the actual inventor." As recently as 1916, three-quarters of the patents in the United States were issued to individuals. See Louis Galambos, *The American Economy and the Reorganization of the Sources of Knowledge*, in Alexandra Oleson and John Voss, eds, *The Organization of Knowledge in Modern America, 1860-1920* 269, 277 (Johns Hopkins 1979).

<sup>10</sup> See Noble, *America by Design* at 87-109 (cited in note 7). The change reflects, of course, both the rise of the corporate form of business during the late nineteenth century, see Lawrence M. Friedman, *A History of American Law* 446-59 (Simon & Schuster 1973),

This Article examines the development of the law respecting ownership of employee inventions during the American Industrial Revolution of the nineteenth and early twentieth centuries. It explores how employers and employees used law to define their respective control over the knowledge—what is now called human capital—that was often both the employee's and the employer's most valuable asset.<sup>11</sup> More specifically, this Article describes a progression in three stages: first, the early nineteenth century rule that employees usually owned the entire right to their inventions; second, the later nineteenth century rule that employees owned their inventions but employers often had a license to use them (an arrangement known as a "shop right"); and third, the twentieth century rule that employers own most employee inventions.

This area of law is of considerable importance today, not only in knowledge-based industries, but also throughout the economy.<sup>12</sup> Employees create the overwhelming majority of patented inventions, but most employees who invent are bound by con-

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and the increased percentage of the population that was employed by others. On the growth of the percentage of the population employed by others in the antebellum era, see Christopher L. Tomlins, *Law, Labor, and Ideology in the Early American Republic* 259 (Cambridge 1993) ("By midcentury, on and off the farm, it seems likely that the proportion of productively engaged Americans employed by others—about one-third in 1820—had increased to about one-half. In Eastern industrializing states . . . the proportion was probably closer to three-fourths.") (citation omitted).

<sup>11</sup> This Article does not address copyright, although copyright law has confronted some of the same problems of attributing ownership or authorship between employer and employee. Recent post-structuralist literary criticism has led to new legal and historical study of the social and legal construction of the notion of authorship. See, for example, Martha Woodmansee and Peter Jaszi, eds, *The Construction of Authorship: Textual Appropriation in Law and Literature* (Duke 1994) (including essays both historical and non-historical that discuss the legal concept of authorship); Mark Rose, *Authors and Owners: The Invention of Copyright* (Harvard 1993) (discussing legal evolution of literary property in the eighteenth century). Copyright law appears to have been rather less generous to the employee-author than patent law has been to the employee-inventor. See, for example, *Community for Creative Non-Violence v Reid*, 490 US 730, 737 (1989) (observing that under the work-for-hire rule of the Copyright Act, the author or artist has no claim to his or her work).

<sup>12</sup> See, for example, Steven Chermansky, Comment, *A Penny for Their Thoughts: Employee-Inventors, Preinvention Assignment Agreements, Property, and Personhood*, 81 Cal L Rev 595, 598 (1993) (discussing the allocation of property rights in the corporate workplace and criticizing the contract law approach); Henrik D. Parker, Note, *Reform for Rights of Employed Inventors*, 57 S Cal L Rev 603, 605 (1984) (discussing the development of the law of allocating patent rights in the employer-employee context, and urging reform "to increase inventive output"); Paul C. Van Slyke and Mark M. Friedman, *Employer's Rights to Inventions and Patents of its Officers, Directors and Employees*, 18 Am Intell Prop L Assn Q J 127, 128-47 (1990) (advising practitioners on how to determine patent rights in employer-employee context). See also Edmund W. Kitch, *The Law and Economics of Rights in Valuable Information*, 9 J Legal Stud 683 (1980); John C. Stedman, Comment, *Rights and Responsibilities of the Employed Inventor*, 45 Ind L J 254 (1974).

tracts requiring them to assign the patents to their employers.<sup>13</sup> Employees are often appalled to discover that an employer who discouraged or ignored a wild idea can then claim to own that idea when it later turns out to be patentable and lucrative. One laboratory assistant recently made headlines when he chose to go to jail rather than to comply with a court order by relinquishing his invention to his employer. His employer had discouraged him from working on the project; when the resulting invention turned out to be worth millions of dollars, however, the employer demanded that the employee assign the patent, as his employment contract provided, even though the employee had developed the invention on his own time.<sup>14</sup>

Even employees who are not bound by a pre-invention assignment contract usually do not own the entire right to their inventions. The modern shop right rule gives the employer a royalty-free license to use the invention if the employee used the employer's facilities or work time in perfecting the invention. For example, the Samsonite Corporation obtained a license to the patents for improved luggage that a shop foreman had invented, because he had designed the inventions on company time with company material.<sup>15</sup> Similarly, a court held that a mechanical engineer who designed an improved pump for spraying chocolate to create M&M candies had accorded a shop right to M&M—even though he was employed by a third party when he designed the pump and worked in the M&M plant only as an independent contractor.<sup>16</sup> Even a lowly general laborer, whose duties included unloading trucks and sweeping floors, discovered he could not prevent his employer from using his patented process for removing worms from pecans because he developed the idea while at work.<sup>17</sup> Finally, a Stair Glide employee who solved a problem of falling Stair Glide elevator chairs defeated the company's claim to a shop right only by showing that his boss had expressly forbidden him to work on the device during company time, leading him

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<sup>13</sup> See, for example, Robert L. Gullette, *State Legislation Governing Ownership Rights in Inventions Under Employee Invention Agreements*, 62 J Pat Off Society 732, 738-39 (1980); William P. Hovell, Note, *Patent Ownership: An Employer's Rights to His Employee's Invention*, 58 Notre Dame L Rev 863, 864 (1983); Parker, Note, 57 S Cal L Rev at 608 (cited in note 12). See also Rights of Employed Inventors, 97th Cong, 2d Sess at 1 (remarks of Rep Kastenmeier) (cited in note 9).

<sup>14</sup> Leon Jaroff, *Intellectual Chain Gang*, Time 64 (Feb 10, 1997).

<sup>15</sup> *Hewett v Samsonite Corp*, 32 Colo App 150, 507 P2d 1119, 1120-22 (1973). However, the court denied the company ownership of the patent because the foreman was not hired to invent.

<sup>16</sup> *Crowe v M&M/Mars*, 242 NJ Super 592, 577 A2d 1278, 1279-81 (1990).

<sup>17</sup> *Wommack v Durham Pecan Co, Inc*, 715 F2d 962, 963-64, 971 (5th Cir 1983).

to do all the work at home and on his lunch hour.<sup>18</sup> As late as the last quarter of the nineteenth century, however, all of these employees likely would have won their cases because they did not voluntarily allow their employers to use their ideas.

Then as now, some courts said that if an employee was hired specifically to invent, the employer owned the invention. But, while modern courts looking at the facts of many nineteenth century cases would probably find that the employee had been hired to invent, relatively few nineteenth century courts reached such a conclusion. Even those courts that did conclude that the employee had been hired to invent often awarded the invention to the employee and only a shop right to the employer.<sup>19</sup> In short, compared to nineteenth century courts, twentieth century courts are much more willing to find that an employee was hired specifically to invent and to find that an employer is entitled to a shop right based on the relation between the employment and the invention.

The turn of the twentieth century also marked a profound change in the dominant mode of reasoning. Courts in the mid-nineteenth century emphasized the property right of inventors, but by the end of the century courts emphasized the contract of employment.<sup>20</sup> A related change was a lesser emphasis on the status of the employee and a greater emphasis on the terms of the employment contract. In the early cases legal outcomes depended on how the court characterized the employee: as "an ingenious person" possessed of "inventive skill," on the one hand, or as a mere "mechanic" on the other. But by 1933 the Supreme Court thought it a truism that "[t]he respective rights and obligations of employer and employee, touching an invention conceived by the latter, spring from the contract of employment."<sup>21</sup>

There are three overlapping conceptual stages in the development of the law respecting the inventions of the employee-inventor. The first was the period between roughly 1840 and the

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<sup>18</sup> *Dewey v American Stair Glide Corp*, 557 SW2d 643, 645-48 (Mo Ct App 1977).

<sup>19</sup> The United States Supreme Court, for example, determined in two late nineteenth century opinions that an employee who was hired to invent something and made an invention owned the rights to the invention, while the employer acquired only a shop right. In both cases the Court declined to grant an injunction ordering the employee to assign the patent to the employer. *Hapgood v Hewitt*, 119 US 226, 233-34 (1886); *Dalzell v Dueber Watch-Case Manufacturing Co*, 149 US 315, 324-26 (1893).

<sup>20</sup> On the nineteenth century transition from the English law's treatment of employment as a fully executed contract of hiring (in which the terms of the employment relationship are not contractually determined) to the view of the employment contract as executory (in which contract governs all terms of employment), see John V. Orth, *Contract and the Common Law*, in Harry N. Scheiber, ed, *The State and Freedom of Contract* (Stanford forthcoming).

<sup>21</sup> *United States v Dubilier Condenser Corp*, 289 US 178, 187 (1933).

mid-1880s, when the inventor's status as an employee was irrelevant to ownership of inventions, and the shop right was a variation on equitable estoppel rather than a doctrine of employment law. Although the modern employer's shop right flows directly from the fact of employment when the employee uses the employer's material and facilities in developing the invention, originally the shop right was a license that existed only through the employee's acquiescence. In many cases the existence of an employment relationship was irrelevant to the court's analysis.

The second period began in the 1880s, when courts began to attend more to the nature and existence of the employment relationship when deciding ownership of inventions. In this period, the employer could claim a shop right, and even outright ownership of an employee's invention, based on the employment relationship. Courts more frequently concluded that the employer had hired the employee to invent and thus had bought, through wages or salary, the products of the employee's inventive efforts. Yet courts during this period remained protective of the employee's claim to own the invention, awarding shop rights only warily.

The third period, which began at the turn of the century, is marked by the dominance of contract as the method of analyzing invention ownership. The development of a body of law of employment contracts, covering all aspects of the employment relationship, made it much easier for courts to conclude that employers could and did validly contract to own their employees' inventions.

This conceptual evolution calls for an explanation of why the law developed as it did. The changing rhetoric and rationales of the judges' opinions suggest that a number of forces—both exogenous and endogenous to the legal system—were at work. The changing cultural image of the nature of invention influenced judges' views both about who was the likely inventor and about what allocation of patent rights was most conducive to economic development. The early view was that an invention was the discrete product of a single individual's genius; the modern view is that invention is often the product of many people's work on a corporate research project. In some respects, this is another chapter of the by-now traditional story of how nineteenth century judges used law instrumentally to promote economic development.<sup>22</sup> Employee-inventors tended to be middle-class skilled

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<sup>22</sup> See generally Morton J. Horwitz, *The Transformation of American Law, 1780-1860* (Harvard 1977) ("*Transformation I*"). On the patent system in particular, see B. Zorina

workers and proto-entrepreneurs rather than working class laborers; as a result, employee-inventors did better in this little corner of the law than employees more generally did elsewhere in the Gilded Age legal regime. This is a group who benefited from the legal and political ideology of free labor that pervaded post-bellum America. Judges thought protecting employees' property rights in their ideas would likely produce faster economic development than would occur if the law granted the property right to the inventor's employer.

But the relationship between the legal and social changes that occurred on the border between patent and employment law during these one hundred years is more complicated than the traditional story of the instrumental use of law. For the conceptual structure of the law itself influenced the development of the legal doctrine in this area. The legal rules articulated in the patent acts and caselaw, as well as the practices of the Patent Office and the patent bar, offered both a cognitive structure and an ideology about individual ownership of ideas that significantly influenced how courts regarded inventive employees. The legal categories of the patent law—the inventor, and the notion of a novel idea as *property*—shaped the bench's and bar's perceptions of the source and nature of ideas and of the existence of property rights in ideas. The patent law required that the "first and true inventor" be named in the patent application; this made it easy for judges and lawyers to identify the employee as the rightful owner of the idea. Other legal categories—notably the rise of contract in employment law—later contributed to changing legal perceptions of the employee-inventor, particularly as late in the century employers began using written contracts to structure their relationships with their employees. In addition, the rise of the corporate form enabled courts to see the creation and ownership of ideas as a collective enterprise, rather than in terms of individual inventors.

This Article is based primarily on reported American judicial opinions on the ownership of inventions in the context of any kind of employment relationship before 1930, as well as on treatises and other materials published by and for lawyers.<sup>23</sup> The impor-

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Khan, *Property Rights and Patent Litigation in Early Nineteenth-Century America*, 55 J Econ Hist 58, 93 (1995) ("If inventive activity were indeed responsive to material incentives, then the legal system played an important part in stimulating greater technical change by reinforcing the effectiveness of the patent system.").

<sup>23</sup> Both patent law and employment law were largely judge-made throughout the nineteenth century. Judicial opinions are thus the primary materials to study. Although Congress enacted the first Patent Act in 1790, the statute was not comprehensive. Congress



tance of common law doctrine as an ideology in the nineteenth century doubtless varies from subject to subject. Others have made a compelling case that the ideology of master-servant law influenced nineteenth century workplace power relationships,<sup>24</sup> and, more generally, class and political relationships.<sup>25</sup> Patent law seems to be another area where legal doctrine significantly shaped social perceptions of the nature and value of ideas, although, unlike labor law, it has not captured the interest of many legal historians. That ideas could be the property of a person or a firm—the concept of intellectual property—was first a legal concept and then a social fact. Patents clearly contributed to the reification of ideas as things, as property, and as valuable commodities because patent law decided which ideas deserved economically valuable monopoly protection and which did not.<sup>26</sup> Patent law thus adopted the Romantic notion of the individual as *the* inventor or originator of an idea, and turned it into a legal category that supported a whole system of property rights, thus turning a legal category back into a social fact. Legal involvement was integral to the entire social practice, for it prevented the duplication that could undermine the value of an innovation. Consequently, inventors sought patents. One might form an agreement or conduct a business with little express involvement of lawyers, judges, or the state, but one could not obtain a patent without

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legislated little on the subject for decades after the revision of the patent laws in 1836. The statute entirely neglected employment law aspects of patent. Thus, to whatever extent Congress and the Patent Office were important in shaping patent law in other areas, the problem of sorting out competing employer and employee claims to patents was left largely to the judiciary. The tasks of developing a coherent structure and of justifying it to the people whose rights were affected was left to the common law adjudication process. See Friedman, *A History of American Law* at 379-81 (cited in note 10). In most of the cases that comprise this study, there was no jury because the plaintiff sued in equity. In some, especially the contract cases in Section II, however, the case was submitted to a jury. In the main, judges appear to have been a far more significant influence on patent ownership than juries.

<sup>24</sup> See, for example, Tomlins, *Law, Labor, and Ideology* at 225-29 (cited in note 10) (noting that the common law's particular concerns became accepted as a form of expertise that affected the early American republic's political, social, and economic debates, and that the law of master and servant articulated a hierarchical view about work relationships that was in conflict with, but ultimately changed, early republican notions of freedom and equality).

<sup>25</sup> See, for example, William E. Forbath, *Law and the Shaping of the American Labor Movement* (Harvard 1991); Victoria C. Hattam, *Labor Visions and State Power: The Origins of Business Unionism in the United States* (Princeton 1993); Karen Orren, *Belated Feudalism: Labor, the Law and Liberal Development in the United States* (Cambridge 1991).

<sup>26</sup> See Christine MacLeod, *Inventing the Industrial Revolution: The English Patent System, 1660-1800* (Cambridge 1988) (discussing the evolution of the English patent system, which was a partial model for the American system).

them.<sup>27</sup> Patent, as much as, or even more than employment, seems to be an area where strong claims can be made for the social significance of legal categories and of legal doctrine as ideology.

A caveat about terminology is in order. To group all these cases together as confronting "employer and employee" issues is a shorthand that risks obscuring important distinctions. There were many different types of employees in the cases. Some were mechanics and laborers who probably were not paid much; others were highly trained chemists and engineers, high-level supervisors and factory foremen, well-compensated partners, or directors and officers of the employer firm. Few were at the bottom of the labor market; most were middling sorts; and some were near the top. Lumping all of these people into the category of "employee" is misleading if it suggests to the reader that all these inventor-employees were, and were perceived by judges as, working class. I have run that risk because the courts ultimately came to regard employment per se as determinative in many cases. The fact of employment either entitled the employer to the invention (in the twentieth century) or did not (in the nineteenth), but (except in certain cases, as explained below) the employee's status in the firm did not matter, at least not overtly.

But the employee-inventor's social position did matter when the courts determined whether the employee was in fact the inventor. The early cases regarded the problem of allocating ownership simply as one of fact: to determine whether the employer or the employee had had *the* fundamental idea of the invention. In these cases, the employee's skill level and social position were regarded as highly relevant in discerning his potential for creativity and inventiveness. As George Curtis explained in his 1849 *Treatise on the Law of Patents*, determining patent ownership as between employer and employee "depends upon the relative situations of the parties, the nature of the employment."<sup>28</sup> At a deeper level, however, the fact that these employees were mainly men of middling social position *did* matter in every case.<sup>29</sup> The rules that

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<sup>27</sup> Patents were heavily litigated in the nineteenth century. See Friedman, *A History of American Law* at 379 (cited in note 10).

<sup>28</sup> George Ticknor Curtis, *A Treatise on the Law of Patents for Useful Inventions in the United States of America* § 49 at 42 (Little, Brown 1849) ("Curtis I").

<sup>29</sup> "Men" is used advisedly here, as are gendered pronouns. Just one of the cases discussed in this Article involved a female inventor. See *Fry v Rockwood Pottery Co*, 90 F 494, 494 (Cir Ct S D Ohio 1898), aff'd 101 F 723 (6th Cir 1900), discussed in note 88. One ought not conclude, however, that female employees did not invent. Rather, it is likely that female employees' inventions were credited to their male co-workers or bosses or never wound up in litigation. See Erik Arnold and Wendy Faulkner, *Smothered by Invention*:

courts adopted can be attributed to the judicial unwillingness to divest the creative man of his valuable asset, the property right in the patent. To take that away might knock the employee off his precarious perch amidst the ranks of independent artisans into the masses of dependent wage laborers.

# I. OWNERSHIP OF INVENTIONS IN THE ABSENCE OF A CONTRACT

They all laughed at Christopher Columbus when he said the world was round.

They all laughed when Edison recorded sound.

They all laughed at Wilbur and his brother when they said that man could fly.

They told Marconi wireless was a phony.

It's the same old cry!

...

They all laughed at Rockefeller Center. Now they're fighting to get in.

They all laughed at Whitney and his cotton gin.

They all laughed at Fulton and his steamboat, Hershey and his chocol'te bar.

Ford and his Lizzie kept the laughers busy—

That's how people are!

Ira Gershwin<sup>30</sup>

The origins of the modern law governing ownership of employee inventions lie in general equitable rules and in interpretations of the early Patent Acts, not in the law of master and servant. The courts' first published efforts to sort out claims to ownership of employee inventions involved cases where the courts did not identify any contract between the parties regarding ownership of the inventions. The earliest of these cases, from the period 1840-1870, arose when employment as a single legal category was nascent. There were multiple legal statuses—master and household servant; master, journeyman, and apprentice; corporation and employee; partners, principal, and agent—that described different employment relationships; the rights and obligations of the parties were not uniform across all categories.<sup>31</sup> When the courts

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*Technology in Women's Lives* 51-58 (Pluto 1985). The maleness of all these inventive employees may also have contributed to the relatively pro-employee bent in the law.

<sup>30</sup> Ira Gershwin, *They All Laughed*, in Michael Feinstein, ed, *Ira Gershwin Songbook* 165 (Warner Bros 1984) (punctuation modified), from the film *Shall We Dance* (1937).

<sup>31</sup> According to Christopher Tomlins, the category of persons whom the law called "servants" was quite small in the colonial period (mainly indentured servants), but the

first approached competing claims to ownership of inventions, the employment status of the inventor was not his most relevant characteristic. Rather, the popular image of the inventor as a heroic genius shaped the law governing ownership of employee inventions more profoundly than did the ideology of the master-servant relationship.

Some inventors of the earliest patented United States inventions doubtless were employed by others, but their employment status does not appear from the available records.<sup>32</sup> There are no reported cases before 1843 in which an employer claimed, as against an employee, ownership of a patent because the inventor had been working for him at the time of the invention.<sup>33</sup> Even once decisions about employee patents began to be reported, the

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category expanded dramatically over the course of the nineteenth century. Tomlins, *Law, Labor, and Ideology* at 255-70 (cited in note 10).

The multiple employment relationships and the possibility that "master" and "servant" had multiple meanings are discussed, with citations to numerous treatises, in Robert J. Steinfeld, *The Invention of Free Labor: The Employment Relation in English and American Law and Culture, 1350-1870* 17-22 (UNC 1991). Wood's 1877 and 1886 treatises tried to create a unitary category of master-servant out of the multiple relations. H.G. Wood, *A Treatise on the Law of Master and Servant, Covering the Relation, Duties and Liabilities of Employers and Employees* iii (John D. Parsons 1877) ("Wood I"); *Id* § 2 at 3 (Bancroft-Whitney 2d ed 1886) ("Wood II"). Tomlins notes that nineteenth century treatise writers extended the concept of "servant" to apply to a large range of employed persons who would not have been considered servants at the end of the eighteenth century. Tomlins, *Law, Labor, and Ideology* at 268 (cited in note 10).

<sup>32</sup> The Patent Office did not record the employment status of the patentee. See B. Zorina Khan and Kenneth L. Sokoloff, "Schemes of Practical Utility": *Entrepreneurship and Innovation Among "Great Inventors" in the United States, 1790-1865*, 53 *J Econ Hist* 289, 306 (1993).

<sup>33</sup> The first such case was *McClurg v Kingsland*, 42 US (1 How) 202 (1843). Willard Phillips's influential patent treatise from 1837 did not mention the problem of determining patent ownership when the inventor was an employee. See Willard Phillips, *The Law of Patents for Inventions; Including the Remedies and Legal Proceedings in Relation to Patent Rights* 150-68 (American Stationers' 1837). He said only that "evidence that the plaintiff's patent was for an invention made by a journeyman in his shop, with his consent" would be "doubtless a good defence against a claim for damages for an infringement," though he cited no cases for this proposition. *Id* at 418-19.

It seems implausible that there were no such cases before 1843, but they evidently did not capture the interest of the limited number of people who reported court decisions. In the early nineteenth century, many court decisions were neither written nor reported. In 1784 or 1785, Connecticut became the first state to require that judges render written opinions. See Charles Sellers, *The Market Revolution: Jacksonian America, 1815-1846* 50 (Oxford 1991) (claiming 1784); Erwin C. Surrency, *A History of American Law Publishing* 42 (Oceana 1990) (claiming 1785); Charles Warren, *A History of the American Bar* 328 (Little, Brown 1911) (crediting Connecticut with being the first state and passing the statute in 1785). Private reporters for Connecticut and Pennsylvania were first published in 1789. See Surrency, *History of American Law Publishing* at 40. In 1815, only half a dozen states provided official court reporters and even then only for appellate courts. See Sellers, *The Market Revolution* at 50. Accessible and uniform law emerged only well into the nineteenth century. See Surrency, *History of American Law Publishing* at 42-43.

law was slow to evolve as a branch of employment or master-servant. Rather, employers' interests in employee inventions were protected under a provision of the Patent Act and a similar equitable principle that forbade one who had voluntarily allowed use of his invention to claim later that the user had no right to do so. Not until the last quarter of the nineteenth century did courts really begin to see the relevance of the inventor's status as an employee. And even then courts regarded the inventor as an inventor first and an employee second. Finally, at the end of the nineteenth century, courts began to see that employers might hire a person precisely because of his "inventive capacities" and that the employer might therefore own the product of the employee's creativity. Until the early twentieth century, however, courts remained reluctant to reach this conclusion.

A. The Myth of the Heroic Genius Inventor: Law and the Social Practice of Invention in the Nineteenth Century

The patent law both reflected and reinforced the notion of invention as a product of individual genius. Applicants for patents had to state the name of *the* inventor; the law both assumed the existence of, and required the patent applicant to identify, a person (or persons) as the inventor.<sup>34</sup> This notion that one or a few specific individuals must have been the inventor reflected, to some extent, the social practice of invention. Few firms made systematic efforts to develop ideas collectively.<sup>35</sup> In the late nineteenth century, research laboratories dedicated to invention and technological innovation—like Thomas Edison's famed laboratory enclave at Menlo Park, New Jersey—were unusual.<sup>36</sup> Their nov-

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<sup>34</sup> The 1836 Patent Act required an inventor to make an "oath or affirmation" that he believed he was "the original and first inventor" and that "he does not know or believe that the same was ever before known or used . . ." Act of July 4, 1836 § 6, 5 Stat 117, 119. See *Curtis I* § 172 at 268 (cited in note 28). The right of the "true inventor" to the patent comes from the English Statute of Monopolies, which prohibited the monarch from granting monopolies except, *inter alia*, "to the first and true inventor or inventors" of "any manner of new manufacture, within this realm . . ." 21 James I, c 3 § 5, quoted in John Davies, *A Collection of the Most Important Cases Respecting Patents of Invention and the Rights of Patentees* 21 (W. Reed 1816).

<sup>35</sup> In 1885, only 12 percent of patents were issued to corporations; by 1950, at least three-quarters were. Noble, *America by Design* at 87 (cited in note 7). While this statistic reflects in part the spread of the corporation, it also reflects in part a change in the social practice of technological development.

<sup>36</sup> See Ronald R. Kline, *Steinmetz: Engineer and Socialist* 127-61 (Johns Hopkins 1992) (chronicling development of GE Research Laboratories); John Rae, *The Application of Science to Industry*, in Oleson and Voss, eds, *The Organization of Knowledge* 249, 258-64 (cited in note 9). For the leading research on the predominance of independent inventors around the turn of the century, see Naomi R. Lamoreaux and Kenneth L. Sokoloff, *Inventors, Firms, and the Market for Technology in the Late Nineteenth and Early Twentieth*

elty reinforced in the public mind the idea that individual effort, not an organized and employer-sponsored research agenda, produced most inventions. Patent litigation further stimulated the search for the individual inventor,<sup>37</sup> because one of the common grounds for attacking either the Patent Office's decision to award a patent or a patent's validity in defense of an infringement action was to assert that the patentee was not the true or first inventor.<sup>38</sup> The legal structure thus invited patentees to identify, in their legal documents as in their own minds, an invention as the product of one person's genius, rather than as the product of a collaborative process.

Correspondingly, patent users accused of infringement had reason to argue that the patent was not based on the patentee's own idea. As a result, among the earliest patent decisions that addressed employee patent rights were cases in which the employer was the patentee and the defendant infringer argued that the patent was invalid because a workman (who was not a party to the litigation) had been the true inventor. The courts attempted to develop a set of rules about when the suggestions or contributions of the worker were so significant as to vitiate the patentee-employer's claim to be the true inventor. The courts concluded that the employer was entitled to the status of inventor so long as the contributions of the employee "required no more skill

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*Century United States*, in Naomi R. Lamoreaux, Daniel M.G. Raff, and Peter Temin, eds, *Learning by Doing in Firms, Markets, and Nations* (Chicago forthcoming). See generally Elizabeth Brayer, *George Eastman: A Biography* (Johns Hopkins 1996) (discussing the founder of the Eastman Kodak Company and the firm); David A. Hounshell and John Kenly Smith, Jr., *Science and Corporate Strategy: Du Pont R&D, 1902-1980* (Cambridge 1988); Leonard S. Reich, *The Making of American Industrial Research: Science and Business at GE and Bell, 1876-1926* (Cambridge 1985).

<sup>37</sup> Cases involving ownership of patented inventions arose in both state and federal courts. Because Congress had placed exclusive jurisdiction over the validity of patents in the Patent Office and the federal courts, some of the litigation about ownership of inventions occurred in appeals from Patent Office decisions awarding patents or in infringement suits. In some cases, however, the validity or infringement of a patent was not in issue; the issue was ownership of the patent and the idea it protected. Such cases were regarded as matters of contract law or master and servant law, and were litigated in state court unless the requirements of diversity jurisdiction were met. There was a certain amount of confusion in the early cases about whether state courts had jurisdiction over suits alleging, for example, breach of promise to assign patents, because of the federal courts' exclusive jurisdiction over the validity of patents, but most state courts understood that they could enforce the contracts without inquiry into the validity of the patents. See, for example, *Middlebrook v Broadbent*, 47 NY 443, 446-48 (1872); *Binney v Annan*, 107 Mass 94, 95 (1871).

<sup>38</sup> See *Curtis I* §§ 39-43 at 31-37 (cited in note 28); George Ticknor Curtis, *A Treatise on the Law of Patents for Useful Inventions* §§ 118-23 at 130-39 (Little, Brown 4th ed 1873) ("*Curtis III*").

or ingenuity than that possessed by an ordinary mechanic skilled in the business . . . .<sup>39</sup>

Whatever may be the proportion of all inventions that were devised by one person alone prior to the Industrial Revolution, it declined as technology grew more complex during the nineteenth century.<sup>40</sup> The notion of the inventor as a genius working alone in his shop became increasingly anachronistic as the complexity of technology required numerous machinists, chemists, or other skilled workers to contribute to the development of ever more sophisticated and complicated machines, compounds, and processes. Collective research and development had become the source of most inventions long before courts and the public finally realized it. One of the earliest reported decisions discussing an organized research laboratory and the collaborative nature of invention as relevant to patent ownership was a 1911 decision involving an improved light bulb invented by employees of General Electric's research labs.<sup>41</sup> As the reality of collective invention confronted the individualist paradigm of nineteenth century patent law, the law's choice of which particular individuals to consider the inventors may have been determined as much by interpersonal or political skill and economic power as by inventive genius.

The notion that a single person was the inventor of an idea, and that he owned not only the particular thing he built (for example, *the* cotton gins that Eli Whitney himself made), but also the idea embodied in that thing (and thus had an exclusive right

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<sup>39</sup> *Teese v Phelps*, 23 F Cases 832, 834 (Cir Ct N D Cal 1855). See also *Alden v Dewey*, 1 F Cases 329, 330 (Cir Ct D Mass 1840) (opinion by Story) (explaining that in determining who was the inventor, "[i]t was not enough, that Draper gave a hint; nor, on the other hand, was it necessary, that he should communicate every minute thing about the invention; but he must have communicated the substance"). In an influential English case of the era, two judges spoke of the need to protect employer-inventors from the risk that the men they employed would wrongfully claim to be the inventors. See *Allen v Rawson*, 1 CB 551, 135 Eng Rep 656 (CP 1845). One judge said, "It would be very dangerous to employ any workman in matters of this sort, if the inventor were precluded from adopting any slight and subordinate improvement suggested by him." 135 Eng Rep at 665. The other said, "I think it is too much that a suggestion of a workman, employed in the course of the experiments, of something calculated more easily to carry into effect the conceptions of the inventor, should render the whole patent void." *Id* at 666.

<sup>40</sup> See, for example, Khan and Sokoloff, 53 J Econ Hist at 295-301 (1993) (cited in note 32) (noting that early nineteenth century inventors were generalists who lacked specialized training); Lamoreaux and Sokoloff, *Inventors, Firms, and the Market for Technology* (cited in note 36) (discussing impact on individual inventors of increasingly complex technology).

<sup>41</sup> See *Ladoff v Dempster*, 36 DC App 520, 523 (1911). Ironically, for all the court's attention in that case to the size and sophistication of the lab, *id*, the court held that the former employee, not GE, was entitled to the patent because GE's chemists initially dismissed the employee's idea and GE refused to apply for a patent on it. *Id* at 525-26, 530.

to make any similar thing), was a conception of property in ideas, an attribution of causation, and an individuation of what is necessarily a social process. That notion of individual inventorship and of property in ideas developed over the course of several centuries. By the nineteenth century, however, it was so widely accepted as to seem a matter of natural right.<sup>42</sup> The legal and philosophical roots of the individual inventor's right to exclusive dominion over his ideas were deep and strong by the time courts began to combine the law of patents with the law of master and servant in the late nineteenth century.

B. The Origin and Development of the Shop Right Doctrine as a License Based on Consent or Estoppel

The earliest reported opinions on the rights of employers in their employees' inventions involved infringement disputes between the employer and third parties. In these cases the third party defended against the alleged infringement by asserting that the employer's claim to the patent was invalid because the employer's workman was the real inventor. Judging from the opinions' recitations of the facts, this defense was conjured up by infringers searching for any conceivable basis for challenging the patents' validity. In these circumstances, the infringers could not have known at the time of the infringement that the patentee-employer was not the actual inventor. Not surprisingly, the courts rejected this post-hoc excuse for infringement. To do so, they readily accepted the employer's characterization of the employee as just a workman who simply executed the instructions the employer gave.<sup>43</sup> In these early cases, the employment rela-

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<sup>42</sup> See Federalist 43 (Madison), in Clinton Rossiter, ed, *The Federalist Papers* 271-72 (Mentor 1961) ("The copyright of authors has been solemnly adjudged in Great Britain to be a right of common law. The right to useful inventions seems with equal reason to belong to the inventors. The public good fully coincides in both cases with the claims of individuals."). Finally, when searching for the roots of the nineteenth century law's insistence on the rights of the individual inventor, one ought not overlook that the right of the inventor to own his "discoveries" was enshrined in the Constitution. The Constitution spoke in explicitly instrumental terms. The clause according Congress the power to enact patent and copyright laws claimed "[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries . . ." US Const, Art I, § 8, cl 8.

<sup>43</sup> See *Dixon v Moyer*, 7 F Cases 758, 759 (Cir Ct D Pa 1821); *Sparkman v Higgins*, 22 F Cases 878, 879 (Cir Ct S D NY 1846); *Dental Vulcanite Co v Wetherbee*, 7 F Cases 498, 502-03 (Cir Ct D Mass 1866). Later cases reached the same result. See *Matthews & Willard Lamp Co v Trenton Manufacturing Co*, 73 F 212, 215-16 (Cir Ct D NJ 1896).

Not every case rejected the defense, however. In an 1888 infringement action, the court determined the patent invalid because the employer's idea—to imitate in print fabric the crinkly texture of the seersucker weave—was not novel; the court suggested that the novelty lay in the employee's print design. See *Streat v White*, 35 F 426, 427-28 (Cir Ct S D



tionship as a legal structure was all but irrelevant. The employer successfully claimed the invention because the idea was his own, not because he was the employer. Nevertheless, these few cases sowed the seeds for later developments: an early patent treatise author deduced from them a general rule that "the person who suggests the principle of the invention is the inventor," whether master or servant.<sup>44</sup> In only one of these cases did the court confront an employer's claim that he owned the product of the employee's creative mind (as opposed to the products of his hands). And in none of them did the court address a dispute *between* an employer and employee over an idea they both claimed.

The first published opinion resolving a dispute between an employer and an employee over their rights to the employee's invention was the Supreme Court's 1843 decision in *McClurg v Kingsland*.<sup>45</sup> The Court held that, because the employee had freely allowed the employer to use his invention (which he had developed at work) before patenting it, the employer had a license to use the invention.<sup>46</sup>

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NY 1888).

<sup>44</sup> *Curtis I* § 49 at 42-43 (cited in note 28). In support of this, Curtis cited a number of English cases, including *Minter v Wells and Hart*, 1 Webs Pat Cases 127, 132 (NP 1834) (holding that person originating the idea is inventor, and not treating employment as determinative of ownership); *Rex v Arkwright*, 1 Webs Pat Cases 64, 72 (1785) (holding that the employer was not the inventor, because he obtained the idea from his workmen); *Barker and Harris v Shaw*, 1 Webs Pat Cases 126 (no date) ("But if a person be employed to perfect the details of or carry out into execution the original idea of the patentee, that which he suggests or invents while so employed, and subsidiary to such idea, is in law the invention of the patentee."). Curtis also cited cases holding that, so long as the employer conceived of the idea, the employer was the inventor even if the employee used his skill to make the item. *Curtis I* § 49 at 43, citing *Bloxam v Else*, 1 Carp Pat Cases 432, 436-37 (KB 1825), and *Makepeace v Jackson*, 4 Taunt 770 (CP 1814). In none of these cases (except *Makepeace*) did the court really analyze the rights of the employer in the employee's inventions. Neither Godson's 1823 treatise on English patent law, nor Phillips's 1837 treatise on American patent law, dealt with the rights of employer and employee. Richard Godson, *A Practical Treatise on the Law of Patents for Inventions and of Copyright* (William Benning 2d ed 1844); Phillips, *The Law of Patents for Inventions* (cited in note 33). Hindmarch was the first patent treatise writer to mention the problem of master and servant. He said: "Our law . . . permits an inventor in the prosecution of his discovery to avail himself of the labour of servants, they being considered as mere tools or instruments working by his directions, and carrying out the views which he has formed in his own mind." W.M. Hindmarch, *A Treatise on the Law Relative to Patent Privileges for the Sole Use of Inventions and the Practice of Obtaining Letters Patents for Inventions* 26 (McKinley and Lescure 1847).

<sup>45</sup> 42 US (1 How) 202 (1843). The dispute was between the employer and the employee's assignee, not the employee himself. *Id* at 206. But because the employee's assignee stood in the shoes of the employee, *id*, and because the invention's value to employees often depends on their ability to validly assign the invention to a third party, the dispute may be regarded for these purposes as being between employer and employee.

<sup>46</sup> *Id* at 207-08.

The license right that *McClurg* created did not rest on the employment relationship. Rather, it rested on the notion that an inventor (who happened to be an employee) who allowed someone (who happened to be the employer) to use the invention for a period of years could not later, upon patenting the invention, sue that user for infringement. This rule was simply an application of the established equity doctrine of estoppel:<sup>47</sup> one who knowingly allows or encourages certain conduct cannot later object to it; his earlier forbearance "estops" him from complaining. The employer's license was based on the employee's consent. Every case from 1843 to 1886 that granted a license to an employer to use an employee's invention did so on the basis of this estoppel rationale.<sup>48</sup>

*McClurg* is important not only because it established a new rule, but also because it reveals how courts viewed the employer's position vis-à-vis the employee's invention. James Harley, while employed by the week in the defendant's foundry in Pittsburgh, invented an improved way of casting iron rollers and other metallic cylinders. Harley made a number of experiments during his work at the defendant's foundry. When his invention proved successful, his employer began to use his method and consequently increased Harley's wages.<sup>49</sup> Harley suggested that his employer take out a patent on it and purchase his right, but the employer refused. Harley then went to work for the plaintiffs.<sup>50</sup> When he obtained a patent for the invention, Harley assigned the patent to his new employers, who then sued Harley's former employer for infringement.<sup>51</sup> The circuit court charged the jury that these facts would justify finding that the employee had made "a license, a special privilege, or grant" to the former employer.<sup>52</sup> In affirming the jury's verdict for the defendant, the Supreme Court emphasized that Harley made the invention while in the defendant's employ and allowed him to use it without demanding compensation. The Court went so far as to say that it would have been a "fair construction" of the Patent Act if the circuit court had charged the jury that the patent was void because Harley had

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<sup>47</sup> *McClurg* was not a case in equity; it was a suit before a jury seeking damages for an infringement. *Id.* at 205-06. Nevertheless, the rule the Court employed resembled the equitable doctrine of estoppel. *Id.* at 207-08.

<sup>48</sup> Or at least every case found while researching this Article. See notes 70-76.

<sup>49</sup> 42 US (1 How) at 204-05.

<sup>50</sup> *Id.* at 205.

<sup>51</sup> *Id.*

<sup>52</sup> *Id.*

allowed his invention to be used before having applied for the patent.<sup>53</sup>

The Court cited three cases in support of its conclusion that the employer had a license: *Pennock v Dialogue*,<sup>54</sup> *Grant v Richmond*,<sup>55</sup> and *Shaw v Cooper*.<sup>56</sup> None involved employment. All three concerned the question whether an inventor who sells or allows use of his invention prior to seeking a patent can thereafter obtain a patent. *Pennock* was an infringement suit in which the Court found no infringement because the inventor sold the hose incorporating his invention to the public before he sought a patent; the public sale invalidated the subsequent patent application.<sup>57</sup> *Grant* was similar. The Court found an infringement only because the inventor had acquired a patent (albeit an invalid one) prior to allowing the public use. The public use therefore did not void the later valid patent.<sup>58</sup> The *Shaw* Court found no infringement on a variation of *Pennock*'s public use rule: the inventor had not intended to allow the public to use the patented invention in America, but he had acquiesced in the public use by failing to apply for a patent promptly upon coming to the United States. In this case, the invention had been used in England and to a lesser extent in the United States before the patent was issued.<sup>59</sup>

The facts, reasoning, and holding of *McClurg* thus indicate that the employer acquired the license because Harley had consented to its use, not because of the employment relationship. *McClurg* was nothing more than a variation on *Pennock*; both cases barred an inventor from obtaining a patent monopoly after he freely allowed others to use it. Indeed, that is the "public use" principle for which *McClurg* was and sometimes continues to be cited,<sup>60</sup> it is a rule that Congress wrote into the Patent Act first in

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<sup>53</sup> Id at 208.

<sup>54</sup> 27 US (2 Pet) 1 (1829).

<sup>55</sup> 31 US (6 Pet) 218 (1832).

<sup>56</sup> 32 US (7 Pet) 292 (1833).

<sup>57</sup> 27 US (2 Pet) at 23-24 (explaining "that the first inventor cannot acquire a good title to a patent; if he suffers the thing invented to go into public use, or to be publicly sold for use, before he makes application for a patent").

<sup>58</sup> 31 US (6 Pet) at 243-44.

<sup>59</sup> 32 US (7 Pet) at 322-23, citing *Pennock*.

<sup>60</sup> Among the cases citing *McClurg* as establishing a rule that one who allows others to use his invention cannot later sue for infringement are *Lane & Bodley Co v Locke*, 150 US 193, 198-200 (1893) (relying on *McClurg* to hold that an employee's right to royalties for use of invention was lost through laches because of his failure to request payment); *Woodmanse & Hewitt Manufacturing Co v Williams*, 68 F 489, 492 (6th Cir 1895) (holding that patent owner who allowed use of invention for fourteen years was barred by equity from enjoining infringement); *Chabot v American Button-Hole & Overseaming Co*, 5 F Cases 389, 389-90 (Cir Ct E D Pa 1872) (awarding employer a right to use based on *McClurg* rule).

1836 and subsequently revised.<sup>61</sup> The license by "public use" applied in *McClurg* was not an employment rule either before 1843 or after. Inventors who allowed others to use their invention before patenting it were held to have granted a license or to have invalidated the patent, unless the user was simply testing it at the request of the inventor.<sup>62</sup>

Then as now, the reason for the public use and the shop right rules was fairness, but the conception of "fairness" differed between them. In *McClurg*, Harley allowed his employer to use the invention, and the Court thought it unfair that he should later take back (or charge for) what he had freely given.<sup>63</sup> In *Pennock*, because the patentees had sold their patented hose to the public before obtaining a patent, the Court denied the validity of the patent. Justice Story explained:

If an inventor should be permitted to hold back from the knowledge of the public the secrets of his invention; if he should for a long period of years retain the monopoly, and make, and sell his invention publicly, and thus gather the whole profits of it, relying upon his superior skill and knowledge of the structure; and then, and then only, when the danger of competition should force him to secure the exclusive right, he should be allowed to take out a patent, and thus exclude the public from any farther use than what

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<sup>61</sup> The Patent Act of 1793, § 1, allowed a patent only if the invention was "not known or used before the application . . ." 1 Stat 318, 319. In *Pennock*, Justice Story construed that language to invalidate a patent only if the invention was known or used by the public (as opposed to the inventor or his assistants) before the date of the application. 27 US (2 Pet) at 19. Section 7 of the Patent Act of 1836 codified the Court's holding in *Pennock* so as to halt the problem of patenting inventions that had been in public use. Patent Act of 1836, § 7, 5 Stat 117, 119-20. Congress altered this provision of the 1836 Act when it amended the Patent Act in 1839. Section 7 of the 1839 Act, which the Court construed in *McClurg*, allowed anyone who acquired the patented device less than two years prior to the application for a patent "the right to use, and vend to others to be used, the specific machine, manufacture, or composition of matter so made or purchased, without liability therefor to the inventor . . . except on proof of abandonment of such invention to the public . . ." Patent Act of 1839, § 7, 5 Stat 353, 354.

The history and current treatment of the public use provision are detailed in William C. Rooklidge and Stephen C. Jensen, *Common Sense, Simplicity and Experimental Use Negation of the Public Use and On Sale Bars to Patentability*, 29 John Marshall L Rev 1, 8-21 (1995); F. Andrew Ubel, *Who's on First: The Trade Secret Prior User or a Subsequent Patentee*, 76 J Pat & Trademark Off Society 401, 407-417 (1994). See generally Earnest Bainbridge Lipscomb III, 2 *Walker on Patents* § 7:24 at 459-66 (Lawyer's Co-Op 1985).

<sup>62</sup> On this final exception, see note 65. See also Lipscomb, 1 *Walker on Patents* § 4:14 at 310-11 (cited in note 61) ("The use of the invention by or under the control of the inventor for no longer period than reasonably necessary to determine by experiment whether the invention is complete will not invalidate the patent . . .").

<sup>63</sup> 42 US (1 How) at 207-08.

should be derived under it during his fourteen years; it would materially retard the progress of science and the useful arts, and give a premium to those who should be least prompt to communicate their discoveries.<sup>64</sup>

The rationale was based on the public interest rather than individual fairness. An inventor could not first allow public use in order to create a market for the invention, and then seek a patent monopoly to guarantee a high price.<sup>65</sup> Thus, *McClurg* was a novel interpretation of the public use provision of the 1839 Patent Act and a variation on the equitable principle of estoppel. *McClurg* did not analyze how employment affected an inventor's right to own his invention.<sup>66</sup>

But the reporter of the *McClurg* case did. The headnote suggested that the employer's license was based on facts that the Court's opinion had not emphasized. The headnote read:

If a person employed in the manufactory of another, while receiving wages, makes experiments at the expense and in the manufactory of his employer; has his wages increased in consequence of the useful result of the experiments; makes the article invented and permits his employer to use it, no compensation for its use being paid or demanded; and then obtains a patent, these facts will justify the presumption of a license to use the invention.<sup>67</sup>

Although the headnote emphasized that Harley devised the invention on the job and also received a raise on account of the invention, the Court's reasoning did not. In the Court's opinion, the status and compensation of the employee were irrelevant. The employer was just like any member of the public whom Harley had allowed to use the invention; neither Harley nor his assigns could claim infringement by his former employer or demand com-

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<sup>64</sup> 27 US (2 Pet) at 19.

<sup>65</sup> See James A. Jorgensen, Comment, *Environmentally Dependent Inventions and the "On Sale" and "Public Use" Bars of § 102(b): A Proffered Solution to a Statutory Dichotomy*, 49 U Miami L Rev 185, 201 (1994) (explaining that the patent court "rarely extends the doctrine for the benefit of inventors, typically finding some commercial motivation" for allowing use) (citation omitted); Jay David Schainholz, Note, *The Validity of Patents After Market Testing: A New and Improved Experimental Use Doctrine?*, 85 Colum L Rev 371, 390 (1985) (explaining that market testing to stimulate demand should bar a subsequent patent application).

<sup>66</sup> It is also worthy of note that the employer in *McClurg* did not claim ownership of the patent; rather, he claimed that the patent was invalid. 42 US (1 How) at 205-06. *McClurg* was thus a partial victory for the employee because the court might have concluded that the patent was invalid. In later cases, employers were more ambitious, usually claiming ownership of the patent.

<sup>67</sup> Id at 202.

pensation from it after obtaining the patent.<sup>68</sup> Yet the rule as articulated in the headnote ultimately became as influential as the Court's opinion itself.<sup>69</sup>

For forty years after *McClurg*, lower courts followed the Court's estoppel rationale rather than the employment rule in the headnote. The first case after *McClurg* that involved an employer's license to use an employee's invention<sup>70</sup> illustrates the

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<sup>68</sup> Id at 208-09.

<sup>69</sup> The headnote was very likely written by Benjamin Howard, who at that time was in his first year as the Reporter for the Supreme Court's opinions. See 42 US (1 How) iv (1843) (noting Howard's appointment as the Court's reporter on August 26, 1842, and his swearing in on February 1, 1843). Readers of today's Supreme Court opinions are probably familiar with the admonition at the beginning of the syllabus, which states that "[t]he syllabus constitutes no part of the opinion of the Court but has been prepared by the Reporter of Decisions for the convenience of the reader," citing *United States v Detroit Timber & Lumber Co*, 200 US 321, 337 (1906) (establishing this rule in a case where a headnote was wrong).

The early court reporters' duties "were to summarize the facts, prepare the headnotes, summarize the arguments of counsel," and arrange for publication. Surrency, *History of American Law Publishing* at 43 (cited in note 33). See also William Domnarski, *In the Opinion of the Court* 6-11, 16-18 (Illinois 1996). Then as now, in the Supreme Court as in lower courts, the reporter of court decisions, not the Court, decided what to put in headnotes, although the Court may have reviewed the headnotes as well as the text of the opinion as reported. Yet it remains significant that the headnote in *McClurg* emphasized the license arising from the employment rather than from the employee's consent because the Court's opinion emphasized the latter over the former.

<sup>70</sup> The first shop right case after *McClurg* was *Slemmer's Appeal*, 58 Pa 155 (1868). It did not involve an employer and employee, but instead was an internecine struggle among the partners in a family business. Henry Slemmer, a partner in an oil drilling and refining partnership, developed and patented an improved petroleum refining process. The other partners sued to require him to assign the patent to them jointly as partners and to force him to share the profits from the patent. Id at 161-63. The court declined to require assignment of the patent because it found that Henry was the inventor. Id at 166. It held, however, that under *McClurg* Henry was obliged to give his former partners a license to use the invention. Although the opinion paraphrased the language of the headnote to the effect that a person employed who invents something at the expense of the employer must grant a license to the employer, id at 167, the facts suggested the license rested on the estoppel rationale of *McClurg*: Henry allowed the partnership to use his patented process before obtaining the patent, and indeed did not dispute that the partnership was entitled to a license for so long as the partnership lasted. (The dispute was whether the license would survive the partnership; the court said it did.) Id at 162-63, 167. The shop right was not limited to employers, but also applied among partners in a partnership. Id at 166-67.

Two early cases citing *McClurg*, decided in 1883 and 1884, both found the license to exist in the context of a partnership. Thus, where one partner had made inventions using partnership property, the partnership or remaining partners retained licenses to use the invention upon dissolution of the partnership. See *Wade v Metcalf*, 16 F 130, 132 (Cir Ct D Mass 1883), aff'd, 129 US 202, 206 (1889) (holding that after partnership dissolved, one partner could not sue others for patent infringement, because all the partners had a right to continue to use the machines built at the firm's expense); *Keller v Stolzenbach*, 20 F 47, 49 (Cir Ct W D Pa 1884) (holding that when a partnership dissolved, each partner could use existing sand and gravel separators, but noninventing partner could not make additional ones). Another case, not citing *McClurg*, also found a license in the partnership context. See *Montross v Mabie*, 30 F 234, 235-36 (Cir Ct S D NY 1887).

tendency of courts to emphasize employee consent as the basis for the employer's license. The case, *Chabot v American Button-Hole & Overseaming Co.*,<sup>71</sup> plainly relied on the estoppel aspect of *McClurg*. The inventor (plaintiff) was employed by the defendant as a foreman under a written contract to make five thousand sewing machines containing the defendant's patented devices. While doing so, the plaintiff devised a patentable process for building the machines. The contract specified that any machinery or tools used to make the sewing machines would become the employer's property at a price to be determined later. The court concluded that the inventor had consented to the defendant's use of his process for making sewing machines and that the written contract allowing the use made an even stronger case than *McClurg* for granting a license.<sup>72</sup>

Every decision from 1843 to 1886 that granted an employer a license to use an employee invention did so on the basis of facts like those in *Chabot*, where the employee had permitted or even encouraged his employer to manufacture or use his invention during his employment. To be sure, not every case cited *McClurg*,<sup>73</sup> and of those that did, some quoted its headnote. Nev-

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<sup>71</sup> 5 F Cases 389 (Cir Ct E D Pa 1872).

<sup>72</sup> Id at 389-90. *Wilkens v Spafford*, 29 F Cases 1242 (Cir Ct D Mass 1878), likewise involved an explicit written agreement in which the inventor gave "the exclusive benefit" of his invention to the employer. The court held that the contract gave the employer an exclusive-use license. Id at 1243-44.

<sup>73</sup> *Whiting v Graves*, 29 F Cases 1059 (Cir Ct D Mass 1878) was the first reported shop right decision that did not cite *McClurg*. But like the others, the opinion rested the employer's license on estoppel. The employer sued the defendants for infringement of the patent to a former employee's invention. The defendants claimed the employee had assigned them the employee's interest in the invention. The employer responded that the employee had no interest to assign because the employer had hired him specifically to invent. Id at 1060. The court concluded that the employee-inventor retained an equitable one-half interest in the invention, and that the inventor was hired to make improvements in machines to be used in the employer's factory only, not to be sold to others. "The employment to invent and perfect machinery for that purpose, while it would operate as a license to Whiting to use machines invented by Howard, and put in use under such employment, would not, of itself, confer upon Whiting any legal title to the invention itself, or to letters patent protecting it." Id. Because the employee retained an interest in the invention, he validly assigned it to the defendants and they therefore did not infringe the patent by manufacturing machines patented. Id at 1061.

Similarly, the 1882 decision of *Damon & Bihn v Eastwick*, 14 F 40 (Cir Ct E D Pa 1882), rested on an estoppel notion even though it did not cite *McClurg*. A company directed two chemists employed by the firm to develop an improved process for making aluminous cake. One of the chemists solved the problem and, with the approval of the firm, obtained a patent, which he then refused to assign to the company. The company sued, alleging that the chemist was not the inventor. Upon determining that he was, the court dismissed the suit. The court declined to rule upon "[t]he justice or injustice of the respondent's taxing the salt company, if he proposes to do so, for the use of a process disclosed by experiments made at its request and expense, with its material, while in its employment." Id at 42. The court simply concluded that the employee as the inventor owned the patent

ertheless, all adhered to the estoppel basis for the shop right.<sup>74</sup>

In retrospect, *McClurg* could be read simply as a statutory interpretation opinion, construing Section 7 of the Patent Act of 1839 to prohibit the issuance of a patent from depriving a prior user of the right to use the invention. Alternatively, *McClurg* could be read as a case about licenses arising by consent or estoppel, determining that one who has allowed another to use his invention is estopped from suing for infringement later. Whatever the original rationale, however, *McClurg* became the fountainhead of another branch of law that ceased immediately to have anything to do with the statutory section on which the Court relied and ceased before long to have much to do with consent or estoppel. After *McClurg*, courts almost never relied on the prior public use provision of the statute to allocate rights between employer and employee.<sup>75</sup> Four decades after *McClurg*, the estoppel notion was supplanted by the notion that employers are entitled to a license to their employee inventions, regardless of actual employee consent, because of the resources the employer has contributed. This license came to be known as a "shop right."<sup>76</sup>

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and the employer had no right to use it. In another similar case (that did not mention *McClurg*), the court, upon showing that the employee had supervised and permitted the employer to manufacture his invention (a "Daisy Hood" for a stove) during his employment, concluded that the employer continued to have a license to manufacture Daisy Hoods after the employee left to set up his own firm to manufacture them. *Herman v Herman*, 29 F 92, 94 (Cir Ct S D NY 1886).

<sup>74</sup> The *McClurg* doctrine was not mentioned in employment law treatises for forty years after *McClurg* was decided. Even the second edition of Wood's influential *Treatise on the Law of Master and Servant* in 1886 dealt with the ownership of employee inventions only in a couple of sentences. Wood put employee inventions in the category of the master's entitlement to the servant's earnings. He said, "For the encouragement of improvements in machinery, etc., it is held that if a servant makes an improvement in machinery, or invents a machine, the master is not entitled to the patent as against the servant, unless the servant was hired for that purpose." *Wood II* § 101 at 200 (cited in note 31). See also id § 50 at 76 ("[A]n apprentice or servant who invents a machine during the period of his apprenticeship or service is entitled to the patent thereon, but, in the case of a servant, the rule is different, if he was employed for the express purpose of inventing."). Wood cited *Hill v Thompson*, 8 Taunt 375 (CP 1818), and *Bloxam*, 1 Carp Pat Cases 568, but in neither did the employment relationship play into the court's analysis. See note 44. Wood also cited *Green v Willard Improved Barrel Co*, 1 Mo App 202 (1876), which was a wrongful discharge proceeding and is discussed in note 205, and *Joliet Manufacturing Co v Dice*, 105 Ill 649 (1883), which involved an express contract. See text accompanying notes 246-50.

<sup>75</sup> In *Dable Grain Shovel Co v Flint*, 137 US 41, 42-43 (1890), the Court relied on the public use provision to hold that the former employer of an inventor could use his patented inventions without paying a royalty to the patent assignee because the inventor had constructed and installed them in the employer's facility prior to applying for the patents. This is the only employment case that relied on Section 7; it did not cite *McClurg*.

<sup>76</sup> The origin of the term "shop right" remains a mystery. It must have been a popular term of art because when it first appeared in a published opinion in 1887, the court used it as if the term were already a common usage. See *Annin v Wren*, 44 Hun 352, 356 (NY S Ct



### C. The Development of the Shop Right as an Employment Rule

In the mid-1880s, courts changed their reasoning. They began to award employers a license to use employee inventions because the employee had devised the invention on the job, rather than because the employee had allowed the employer to use the invention. The transition was subtle. In cases that emphasized estoppel, the courts pointed out that the employee had allowed the employer to use the invention by installing it in the employer's plant or encouraging the employer to manufacture it. In cases that emphasized employment, the courts relied principally on the factors that had been noted in the *McClurg* headnote: that the employer supported the development of the invention by paying the employee's wages and allowing the inventor to use the employer's plant to perfect the invention. In both types of cases, however, the employee appeared to have devised the invention on the job using the employer's materials. The circumstances of the inventing did not change, but which facts the courts emphasized did. The courts began to focus less on the employee's conduct in allowing use of the invention and more on the employer's conduct in supporting the development of the invention. The rationale for the license began as a fairness notion based on the employee's free choice; it became an entitlement notion based on the employer's ownership of the raw materials and labor used in developing the invention.

A pair of 1886 federal circuit court decisions in New Hampshire and Massachusetts were the first to ignore the estoppel rationale. In the Massachusetts case, the court awarded a license to the employer simply because its employee built a machine on the job using the invention.<sup>77</sup> The New Hampshire case even more clearly rejected the estoppel notion. While employed as an overseer in the defendant's mill, the plaintiff installed a number of his own patented devices in the mill's machinery.<sup>78</sup> The company's witnesses claimed that the plaintiff allowed the company free use of his inventions in order to test and obtain publicity for them.<sup>79</sup> The inventor testified that he allowed the use only because the company officials told him that his status as employee gave them a right to use his inventions without compensation. (The officials did not deny having said this.) He also argued that when he pro-

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1887).

<sup>77</sup> *American Tube-Works v Bridgewater Iron Co*, 26 F 334, 335-36 (Cir Ct D Mass 1886).

<sup>78</sup> *Jencks v Langdon Mills*, 27 F 622, 622 (Cir Ct D NH 1886).

<sup>79</sup> *Id* at 623.

tested, they agreed to pay him \$250 per year. The company claimed that the payment was a raise; the plaintiff claimed that it was a license fee for as long as the company used the patents. The court concluded that, where an employee's invention was installed in the employer's factory, "a license from the patentee was to be presumed."<sup>80</sup>

Both of these cases could have been decided on the estoppel rationale. In both, the employee appeared to allow the employer to use the device by incorporating it in machines in the employer's factory. It would be irrelevant to the estoppel rationale that the employee in both cases patented the invention *before* allowing its use (unlike in *McClurg* and *Pennock*)—the license in such a case would then just be based on consent, and estoppel would limit the employee's ability to revoke the license if there were reliance. The courts might have emphasized the unfairness of permitting an employee to claim the employer had no license to use the invention, after having allowed the employer to change the fixtures or machines in its plant in reliance on the employee's invention. And, indeed, some fairness overtones appear in the courts' opinions.<sup>81</sup> But both courts' opinions emphasized the employers' entitlement to use that which was developed in their factories, with their materials, and on their work time. The estoppel rationale would have been unpersuasive in the New Hampshire case in any event given the employee's assertion that he installed the device only because the employer claimed a right to use it.<sup>82</sup>

Some cases during the 1880s and 1890s refused to choose between the rationales, emphasizing both that the employer had contributed time and material and that the employee had allowed or encouraged the employer to use the invention. For example, this dual emphasis was apparent in *Hapgood v Hewitt*,<sup>83</sup> the Supreme Court's first post-*McClurg* patent case involving an employment relationship. The Court deemed significant both that the employer financed the development of the invention and that the employee permitted the employer to manufacture it.<sup>84</sup>

The suit was brought in equity and sought to force Hewitt, the inventor, to assign patents for an iron plow to a corporation

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<sup>80</sup> Id at 624. This was dictum, as the court dismissed the suit for lack of subject matter jurisdiction because there was no diversity of citizenship between the parties. Id.

<sup>81</sup> *American Tube-Works*, 26 F at 335; *Jencks*, 27 F at 623-24.

<sup>82</sup> *Jencks*, 27 F at 623-24. The court did, however, suggest that the evidence favored the employer's version of the reason why the employee installed the devices, which might have supported a license based on estoppel. Id.

<sup>83</sup> 119 US 226 (1886).

<sup>84</sup> Id at 230-31.

that was the successor in interest to the corporation that had employed him. Hewitt had gone to work for Hapgood & Company in 1873 as the superintendent of the manufacturing department. In 1876, Hewitt and the company president agreed that the firm should make an iron riding plow; the Court described how Hewitt set about to do it:

During all the time that he was engaged in devising and constructing the new plow he was in the employ of the corporation, and drawing a salary of \$3,000 a year. The time during which he was so engaged was the regular working hours in the factory. The men who did the manual labor on the new plow were all employees of and paid by the corporation, and all the materials used in its construction were bought and paid for by the corporation.<sup>85</sup>

Clearly the Court meant to emphasize the importance of the employer's contribution to the invention. But the Court also emphasized that Hewitt allowed his employer to believe that the invention was the firm's property:

During the time Hewitt remained in its employ he never made any claim of property in any of the devices and improvements made or suggested by him in the new plow, and never stated or claimed that he was entitled to a patent on any of said improvements, or that he had any rights adverse to the corporation in any of said improvements or devices . . . .<sup>86</sup>

Thus the Court premised its recognition of the employer's license on both the estoppel and the employment rationales.

Cases after *Hapgood* began to base a shop right increasingly on the employer's support of the invention. In *Withington-Cooley Manufacturing Co v Kinney*,<sup>87</sup> an 1895 Sixth Circuit decision, the court inferred a license from the fact that the employee-inventor had developed a power press on the job *and* had allowed the employer to make and sell his improved press for ten years before suing for infringement.<sup>88</sup> Even more emphatically, an 1897 Sec-

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<sup>85</sup> Id at 230.

<sup>86</sup> Id at 231.

<sup>87</sup> 68 F 500 (6th Cir 1895).

<sup>88</sup> Id at 505. The court concluded that the ten year delay in filing suit and the fact that the invention was developed on the job, rather than simply a failure to protest, were the bases for granting a license. Id. An Ohio district court decision observed (in dicta, because it found the patent invalid for lack of novelty) that an employer would have a license to use a method of applying color to pottery because the inventor had developed the method while she was working at the pottery firm and an officer of the firm was the one who suggested—two years later—that she seek the patent and assign it to the firm. *Fry v Rockwood Pottery Co*, 90 F 494, 499-500 (Cir Ct S D Ohio 1898).

ond Circuit decision found the employer had a shop right in the machines for seaming sheet metal tubes because the inventor was "a workman in the employ of another," who "manufacture[d] for him, in his shop, and with his materials, and upon weekly wages, machines which the employer use[d] as a part of his tools, without knowledge of any objection thereto."<sup>89</sup> The court thought it inappropriate that an employee should "seek[ ] to restrain the employer from the use of the particular machine or machines which had been thus made in the employer's shop under the supervision of the employé, and apparently as a part of his ordinary mechanical work."<sup>90</sup> Although the court claimed that the license was an "outgrowth of the law of estoppel in pais,"<sup>91</sup> the estoppel notion was hardly part of the story, given that the employee had demanded a royalty as soon as the machines were constructed. Indeed, the employee was fired two days after requesting either that the employer pay a royalty or cease using the invention.<sup>92</sup>

A pair of Pennsylvania Supreme Court opinions from 1896 and 1898 forcefully articulated the idea that the license arose from the employer's investment rather than from the employee's express or implicit consent.<sup>93</sup> The cases resolved a dispute over ownership of recipes for carpet yarn dyes and of samples of dyed yarn. The employee claimed that the books containing his formulas and yarn samples were his property. The employer claimed that they belonged to the mill, and when the employee attempted to depart with the books, the company forcibly stopped him. The mill kept the books, and the dyer sued for them, claiming that they and the recipes they contained were his property. (Indeed, the dyer had concocted many of the recipes in the books before emigrating to the United States and brought them with him when he began work at the mill.)<sup>94</sup>

The Pennsylvania Supreme Court issued two opinions in the case, both for the employer. In the first, the court held that the employee might keep copies of his recipes, but that the original recipe books and yarn sample books were the property of the em-

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<sup>89</sup> *Blauvelt v Interior Conduit & Insulation Co*, 80 F 906, 908 (2d Cir 1897).

<sup>90</sup> *Id.*

<sup>91</sup> *Id.* at 909.

<sup>92</sup> *Id.* at 907-08. A similar case emphasized both the employer's contribution to the invention and estoppel based on the fact that the employer had redesigned its buildings in order to accommodate the employee's machines. See *Barber v National Carbon Co*, 129 F 370, 373-75 (6th Cir 1904).

<sup>93</sup> *Dempsey v Dobson*, 174 Pa 122, 34 A 459 (1896) ("*Dempsey I*"); *Dempsey v Dobson*, 184 Pa 588, 39 A 493 (1898) ("*Dempsey II*").

<sup>94</sup> The story of the case is told in Philip Scranton, *Figured Tapestry: Production, Markets, and Power in Philadelphia Textiles, 1885-1941* 200-04 (Cambridge 1989).

ployer.<sup>95</sup> The court reasoned that the employer purchased, through wages, the product of the employee's skill:

The designer and the color mixer, like the printer and the weaver, are employed, and their wages adjusted, with reference to their skill and experience in the department of work to which they are assigned. They are not independent contractors, producing designs or shades of color by a secret process of their own, which they sell, as patterns or colors, to the manufacturer, for a fixed price; but they are employés, bringing their skill and experience, in the use of the materials furnished by their employer, into his service, for his benefit in the production of his goods.<sup>96</sup>

On remand for a new trial, the employee offered evidence to prove that the custom in the industry was that the carpet mixer's recipes and sample books belong exclusively to the employee.<sup>97</sup> The trial court excluded the evidence.<sup>98</sup> On appeal, the Pennsylvania Supreme Court upheld the exclusion of this evidence on the ground that the custom was "unreasonable" and was contrary to the law of the shop right.<sup>99</sup> The court flatly refused to accept the possibility that, as a matter of trade custom, employees would own the fruits of their creative skill when the employer had hired them to exercise that skill:

It is one of the requisites of a good custom that it must be reasonable. Another is that it must not be contrary to law. The custom sought to be set up was an unreasonable one. The color mixer, like the designer and weaver, is employed because of his supposed ability to serve his employer in the particular line of labor which he is expected to follow. . . . The employer has an equal right to the faithful service of each, and is equally, so far as his own business is concerned, entitled to the results of the labor of each. If a color mixer could at his pleasure carry off the recipes and color books from his employer's factory, and refuse to permit their further use except upon his own terms, it would be in his power to inflict enormous loss on the manufacturer at any moment, and not merely to disturb, but to destroy, his business. Such a custom would not be reasonable, and could not be sustained. But it is against the law. . . . "Even if his employé

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<sup>95</sup> *Dempsey I*, 174 Pa at 130-31.

<sup>96</sup> *Id* at 130.

<sup>97</sup> *Dempsey II*, 184 Pa at 593.

<sup>98</sup> *Id*.

<sup>99</sup> *Id*.

had obtained letters patent for his formula, protecting himself thereby against the public, still the employer's right to continue its use in his own business would be protected by the United States courts.<sup>100</sup>

The court relied entirely on the argument that the employee had developed the recipes and color samples while employed and receiving wages. The employer was entitled to "the faithful service" of his employee and, therefore, to "the results of the labor" for which he had paid.<sup>101</sup>

By rejecting as "unreasonable" the parties' own allocation of rights in the employee's ideas, the court made the shop right arise from the mere fact of the employment relationship. No longer was it an equitable rule to protect the employer, nor even an effort to enforce some implicit understanding between the parties. Rather, the employer was entitled to the employee's ideas because he had bought and paid for the employee's time, effort, and ingenuity.<sup>102</sup>

The demise of the estoppel notion of the shop right occasionally—but rarely—worked to the employee's advantage. An 1896 Indiana decision denied a railroad shop rights in several of its master mechanic's inventions (a spark arrester, a locomotive driver brake, an air brake, and a box lid for car wheels).<sup>103</sup> The mechanic had developed them without using the employer's time, materials, or workers. He had, however, installed the devices on the railroad's trains. Although he testified that he had installed the devices because his supervisor had instructed him to, he also admitted that he had not asked for compensation until he was discharged from his employment. Noting that the railroad had contributed nothing to inventing or patenting the devices, the court determined that the fact that the employee had put them on the trains did not determine whether a license existed.<sup>104</sup>

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<sup>100</sup> Id., quoting *Dempsey I*, 174 Pa at 130.

<sup>101</sup> *Dempsey II*, 184 Pa at 593. This decision followed an English decision that held that a calico printer was entitled, after firing his dyer, to the book in which the dyer recorded the processes for mixing colors, even though many of the processes were the dyer's own invention. *Makepeace*, 4 Taunt at 770. See also *Curtis I* § 49 at 71 n 1 (cited in note 28).

<sup>102</sup> Perhaps one should be cautious in relying heavily on the *Dempsey* opinions to illustrate the trend in ownership of inventions, for the court noted that they did not involve patented inventions, but rather knowledge more akin to trade secrets. *Dempsey I*, 174 Pa at 130. Nevertheless, the court did cite a shop right case as authority and approached the issue under the rubric of shop right, not the rather separate law of trade secrets. Id. But, because there was no patent involved, this case was an easier one for the employer than had a patent been at issue.

<sup>103</sup> *Ft Wayne, C & L R Co v Haberkorn*, 15 Ind App 479, 44 NE 322, 324-25 (1896).

<sup>104</sup> 44 NE at 323-24.

The court emphasized that although the employee had permitted the railroad to use the devices, this fact alone did not establish that he had done so voluntarily:

If appellant had run out of coal, and, knowing appellee had plenty of coal, had ordered him to haul down 1,000 bushels for use in the shops, and he had done so, no one would claim that appellant should not pay therefor because he was its master mechanic, and the coal was necessary to the proper carrying on of his department, even though nothing was said about pay. The same principle is more or less applicable here.<sup>105</sup>

The court declined to award a shop right because "none of the employer's material or labor entered into the discovery or perfection of these inventions, nor was anything of the employer's devoted to the construction of the appliances until after the invention had been put into definite form and carried to completion, and a patent either issued or applied for."<sup>106</sup> Thus, the court treated the lack of the employer's contribution of materials as more significant than the question of whether the employee voluntarily or reluctantly allowed the employer to use the invention.<sup>107</sup>

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<sup>105</sup> Id at 324.

<sup>106</sup> Id at 325.

<sup>107</sup> As the circumstances where the courts would award a shop right expanded, so too did the rights the employer acquired by virtue of the shop right. The expansion took two forms. First, courts gradually decided that the employee could not claim royalties or any compensation under the shop right, and second, courts determined that shop rights might be transferable under limited circumstances.

The first reported decision on whether the employee-inventor could demand compensation for an implied license was *Deane v Hodge*, 35 Minn 146, 27 NW 917 (1886). The inventor, a director and officer of a harvester company, allowed the company to use his patented grain elevator without contracting for additional compensation. The court found "nothing in the case necessarily inconsistent with his individual or private right to make such inventions, and secure a patent therefor as his own peculiar property, and to exclude the use thereof by the company, without his consent, if he elected to do so." 27 NW at 918. Having so found, and having determined that the plaintiff allowed the firm to use the invention, the court concluded that the plaintiff could recover reasonable compensation for the value of the license, notwithstanding the absence of any express agreement. Id at 919-20.

The Supreme Court rejected a claim for additional compensation for a license in *Solomons v United States*, 137 US 342, 346 (1890). The next Supreme Court case on the shop right doctrine, *Lane & Bodley Co*, 150 US at 200-01, rejected an employee's claim to a royalty for the employer's use of his invention. Without deciding whether an employee would ever be entitled to a royalty, the Court held that the employee was barred by laches from asserting the claim. Id at 201. The employee had allowed the employer to use the invention for twelve years without asserting a claim for royalties because he did not want to disturb his amicable relations with his employer, and possibly jeopardize his continued employment. "The plaintiff's excuse in this instance, that he preferred for prudential rea-

Between 1843 and roughly 1900, the employer's right to use its employee's invention had evolved from a license based on the employee's consent to one based on the employer's investment in the employee's labor and its contribution of materials and other support. The latter form of license became known as the employer's "shop right." By the end of the century, the law had evolved from a rule that was quite protective of the rights of the employee-inventor to one that was still somewhat respectful of the employee. Even at the end of the century, however, the employee still owned the patent to his invention and his employer had nothing other than a license to use it without paying royalties.

To explain the courts' willingness to see employees as the rightful owners of their inventions, one may look to the long tradition of craft autonomy among the skilled trades. Until the latter part of the nineteenth century, skilled craft workers successfully asserted their rights to control the craft knowledge used in the production process.<sup>108</sup> Skilled workers were understood to possess—as their own attribute, not as a company resource—the specialized knowledge that was essential to their trade. But industrialization changed the popular, and thus legal, understanding of who owned and controlled the knowledge relevant to the production process. The last quarter of the nineteenth century witnessed a radical loss of autonomy for skilled craft workers. The increased mechanization of work, accompanied by the systematization of management that ultimately became known as Taylorism (after its most influential proponent, Frederick Wins-

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sons to receive a salary from the defendant rather than to demand a royalty, is entitled to a less favorable consideration by a court of equity than if his conduct had been that of mere inaction." *Id.*

Two years later, in *Keyes v Eureka Consolidated Mining Co*, 158 US 150, 152-53 (1895), the Court held that an employer could use the invention of two employees during their employment without paying a royalty. After termination, the employer would ordinarily have to pay a royalty, but in *Keyes* the inventors' delay in demanding a royalty barred their claim on the ground of laches. *Id.* at 153-54.

The Court recognized the employer's license to royalty-free use of an employee's invention for an unlimited time in *Gill v United States*, 160 US 426, 430 (1896). The Court ruled that, by allowing the employer to use the invention, the employee was "precluded ever afterwards" from making a claim for a royalty.

Although in one early case a court awarded a royalty to an employee who had promptly demanded compensation for the employer's use of his invention that he had developed without using the employer's resources, *Burton v Burton Stock Car Co*, 171 Mass 437, 50 NE 1029, 1030 (1898), by the twentieth century courts routinely denied compensation to employees for their employers' use of their patents.

<sup>108</sup> See, for example, David Montgomery, *The Fall of the House of Labor* 9-57, 171-213 (Cambridge 1987). See also *Barnes v Ingalls*, 39 Ala 193, 201 (1863) (refusing to find an agreement that all work done during term of employment must be on employer's behalf).



low Taylor), led employers successfully to claim a right to control the knowledge and skill involved in the production process.<sup>109</sup> Employer rights to use this knowledge (even if not to own it outright) came, by the end of the century, to be seen as essential to efficient production and, more generally, to economic development.

Even as the shop right doctrine became more favorable to employers, the courts retained considerable sympathy for the employee-inventor. After all, the shop right gave the employer only a license, not ownership of the patent. The courts' enduring unwillingness to transform the employer's shop right into an ownership right may be attributed to admiration of inventors and faith in the power of technological development to enrich the nation, which was part of nineteenth century American culture.<sup>110</sup>

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<sup>109</sup> On the enormous influence of Taylorism in undermining the power of skilled craft workers to control the processes of work, and in creating a general popular craze for efficiency in the management of all aspects of life, see Robert Kanigel, *The One Best Way: Frederick Taylor and the Enigma of Efficiency* (Viking 1997); Samuel Haber, *Efficiency and Uplift: Scientific Management in the Progressive Era 1890-1920* (Chicago 1964).

<sup>110</sup> Examples of the hero-inventor genre of the history of American technology include Roger Burlingame, *March of the Iron Men: A Social History of Union Through Invention* vii (Grosset & Dunlap 1938) (arguing that "technological invention" was the most important factor in "the evolution of that social pattern which produced a nation from the United States"); Holland Thompson, *The Age of Invention: A Chronicle of Mechanical Conquest* vii (Yale 1921) (describing "the personalities of some of the outstanding American inventors" and "the significance of their achievements").

On the similar iconography of inventors in England, see Harold Irvin Dutton, *The Patent System and Inventive Activity During the Industrial Revolution 1750-1852* 1-2 (Manchester 1984) ("From Samuel Smiles [*Industrial Biography* (Ticknor and Fields 1864), and *Lives of the Engineers: Early Engineering* (Murray 1874)], who saw the industrial revolution almost entirely in terms of the heroic inventor, right through to the late Ralph Davis's book on foreign trade [*The Industrial Revolution and British Overseas Trade* (Leicester 1979)], inventive activity has, in varying degrees, frequently been cited as one of the more significant explanations of the industrial revolution.").

Much of the academic literature on invention and technology has attempted to debunk the myth of the hero-inventor and to develop a more nuanced view of the causes and characteristics of invention and its relation to economic development. For example, one widely cited book from the 1930s claimed:

The popular belief in individual, single, great inventors for things has been grotesquely developed by the same process as that which built all the classic mythologies to account for the origins of this and that, so that our traditional great inventors, even when really great and the doers of much of what is ascribed to them, are still, from another aspect, mythic heroes in our school-propagated national epos.

...

The American popular belief that McCormick invented the reaper may be worth millions to the International Harvester Co., the fame of Bell certainly is to the telephone company, Fulton is the hero of the Hudson River Day Line, Edison and Marconi of various companies, and the Wright Brothers of the Wright Aero Corporation, while the rival Curtis Interests set dead Langley on an airplane, like the Cid on his horse again, to fight their battle. . . .

Central to this faith was reverence for the genius of the great inventors and the miracle of their accomplishments.<sup>111</sup> The importance ascribed to invention led to a mythology about the inventive process. The popular and even the academic vision of invention in the nineteenth century was that of the genius alone in his workshop, tinkering away until suddenly a bright idea came to him in a flash (what was sometimes called a "Eureka moment").<sup>112</sup>

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The reality of the great invention . . . is a conglomeration of detail inventions so vastly numerous that no one hero, nor country, nor century is enough to define it.

S.C. Gilfillan, *The Sociology of Invention* 77-78 (Follet 1935).

Indeed, the reaction against the hero-inventor thesis in favor of the view that technological change is entirely incremental has recently produced a counter-reaction. Scholars have called for at least some attention to be paid to the contributions of particular persons:

Some historians insist that almost all invention consists of . . . "technological drift," consisting mostly of anonymous, small, incremental improvements. As a reaction to heroic theories of invention in which all improvements are attributed to individual geniuses, the drift theory has been justly influential. But is it not possible to go too far in the other direction and give too little credit to major inventions made by a vital few?

Joel Mokyr, *The Lever of Riches: Technological Creativity and Economic Progress* 12 (Oxford 1990) (citations omitted).

<sup>111</sup> Turn-of-the-century students of the English Industrial Revolution

were likely to be confronted with an elaborate description of the "great" inventions of the eighteenth century, accompanied by diagrams of strings and wires which purported to be the water frame or the power loom. The whole discussion left a cloudy impression that somehow the eighteenth century in England must have been an especially brainy period, when inventors suddenly abounded and, by their cerebrations, brought the marvellous new machines of the age into being.

Frederick C. Dietz, *Book Review of Abbott Payson Usher, A History of Mechanical Inventions* (McGraw-Hill 1929), 35 Am Hist Rev 399, 399 (1930). A 1921 history argued that invention helped to civilize man and that "it is to inventors mainly that we owe all that civilization is, it is to inventors mainly that we must look for all that civilization can be made to be." R.S. Woodward, *Book Review of Bradley A. Fiske, Invention, the Master-Key to Progress* (Dutton 1921), 27 Am Hist Rev 541, 541-42 (1922), quoting Fiske, *Invention* at 5.

<sup>112</sup> Examples of the hero-inventor genre include Thompson, *The Age of Invention* at vii (cited in note 110) (describing "the personalities of some of the outstanding American inventors"), and, more recently, a book whose title reveals much, Mitchell Wilson, *American Science and Invention: A Pictorial History: The Fabulous Story of How American Dreamers, Wizards, and Inspired Tinkerers Converted a Wilderness Into the Wonder of the World* (Simon & Schuster 1954). See also Edmund Fuller, *Tinkerers and Genius: The Story of the Yankee Inventors* (Hastings House 1955) (discussing New England inventors of the late eighteenth and early nineteenth centuries). On the death of the hero-inventor, see Roger Burlingame, *Inventors Behind the Inventor* 4 (Harcourt, Brace 1947) ("[T]he old-time inventor-hero is no longer there when you go to look for him.").

The conventional account of Eli Whitney's invention of the cotton gin is illustrative. While visiting a southern plantation, Whitney learned from his hosts that it was difficult to remove the seeds from cotton. As the story goes, Whitney pondered, tinkered, and in a few days produced the cotton gin that revolutionized cotton processing, guaranteed the South a lucrative cotton crop, sealed the fate of thousands of black people as slaves, and ultimately brought on the Civil War. See, for example, Bruce Catton, *The Civil War* 3 (American Heritage 1971); Kenneth C. Davis, *Don't Know Much About the Civil War* 42

Popular stories on Thomas Edison beginning in the 1870s "[f]ixed in the public mind . . . the image of Edison in a Napoleon-like pose brooding over an incandescent lamp that, we are told, was invented by a hunt-and-try technique assisted by a stroke of genius. In the lore of invention, the lamp sprang without precedent from his massive brow."<sup>113</sup> Not until the latter half of the twentieth century did published accounts of invention emphasize the growing significance of organized corporate research and development.<sup>114</sup> The popular understanding of the hero-inventor's importance in the Industrial Revolution permeated the discourse of patent law, and indeed other areas of commercial law, throughout the nineteenth century.<sup>115</sup>

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(William Morrow 1996). Even some of the contemporary revisionist accounts adhere to the individual genius paradigm; they just emphasize that the geniuses weren't all white men. See Anne L. MacDonald, *Feminine Ingenuity: Women and Invention in America* xx-xxiv (Ballantine 1992) (discussing whether a crucial idea for the cotton gin came from Whitney's hostess, Catherine Greene); Portia P. James, *The Real McCoy: African-American Invention and Innovation, 1619-1930* (Smithsonian 1989) (describing the many inventions of African-Americans).

<sup>113</sup>Thomas P. Hughes, *American Genesis: A Century of Innovation and Technological Enthusiasm 1870-1970* 19 (Viking 1989). Edison's phenomenal reputation as the "Wizard of Menlo Park" was established in 1878 by an article in a New York newspaper; stories attributing him with almost occult power and astounding genius proliferated in the popular press thereafter. See Wyn Wachhorst, *Thomas Alva Edison: An American Myth* 19-37 (MIT 1981). See also Rae, *The Application of Science to Industry* at 250 (cited in note 36) ("The ingenious tinkerer enjoyed an astonishing longevity as an American folkhero, reaching an apex in fact in the twentieth century with Thomas A. Edison and Henry Ford—though Edison depended far more on a well-equipped laboratory and a scientifically trained staff than his popular image suggested.").

<sup>114</sup>Useful historiographic essays on the history of American technology include George H. Daniels, *The Big Questions in the History of American Technology*, in *Symposium: The Historiography of American Technology*, 11 *Tech & Culture* 1, 6-21 (1970); Thomas P. Hughes, *Emerging Themes in the History of Technology*, 20 *Tech & Culture* 697, 700-09 (1979). A history of two prominent nineteenth century inventions that mixes the modern and the traditional ways of thinking about invention is Brooke Hindle, *Emulation and Invention* (NYU 1981) (using the examples of the steamboat and the telegraph to explore the social and psychological nature of the inventive process).

In fact, well into the twentieth century, comparatively few firms systematically invested in research and development. See Galambos, *The American Economy and the Reorganization of the Sources of Knowledge* at 277 (cited in note 9); Lamoreaux and Sokoloff, *Inventors, Firms, and the Market for Technology* at 32 (cited in note 36).

<sup>115</sup>An early and typical example is Chancellor Kent's 1812 decision on the validity of the monopoly on Hudson River traffic that the New York legislature had granted to one steamboat pioneer. In discussing the propriety of the monopoly, Chancellor Kent celebrated the advent of steamboats:

Every lover of the arts, every patron of useful improvement, every friend to his country's honor, has beheld this success with pleasure and admiration. From this single source the improvement is progressively extending to all the navigable waters of the *United States*, and it promises to become a great public blessing, by giving astonishing facility, despatch and safety, not only to travelling, but to the internal commerce of this country. It is difficult to consider even the known results of the undertaking, without feeling a sentiment of good will and gratitude towards the individuals by

The pro-employee character of the early cases involving employee inventions may thus be attributed both to the pre-industrial tradition of craft autonomy and control over the “mysteries” of their trade, and to the Industrial Revolution’s ideology of the genius inventor as the catalyst of technological change and economic growth. Between 1840 and 1900, these twin paradigms began to erode as the economy became more industrialized, firms grew in size and number, and more and more people—including inventors—went to work as employees. Courts began to see the importance to firms of freely using the knowledge of their employees. *Dempsey*, the Pennsylvania decision rejecting the evidence of the custom that carpet dyers own their own recipes, was an effort to rid the law of what that court regarded as antiquated artisan customs and to favor the efficiency of centralized firm control over all of its technology.<sup>116</sup> The court used this branch of patent law in a self-consciously instrumental fashion to promote economic development.<sup>117</sup>

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whom they have been procured, and who have carried on their experiment with patient industry, at great expense, under repeated disappointments, and while constantly exposed to be held up, as dreaming projectors, to the *whips and scorns of time*.

*Livingston v Van Ingen*, 9 Johnson 507, 585 (NY 1812).

<sup>116</sup> For a discussion of the *Dempsey* decisions, see notes 93-102 and accompanying text.

<sup>117</sup> It has been said that the eighteenth century patent system focused mainly on rewarding the inventor for his effort rather than on creating incentives to maximize economic development and that nineteenth century courts and commentators saw patent law in instrumental terms, focusing on public benefit more than on private reward. See Steven Lubar, *The Transformation of Antebellum Patent Law*, 32 Tech & Culture 932, 938-50 (1991). On the development of the instrumental view of English patent law, see Dutton, *The Patent System and Inventive Activity During the Industrial Revolution* at 79-81 (cited in note 110). The courts’ approach to employee patents bears out this thesis, as do Morton Horwitz’s and Willard Hurst’s suggestions about the development of law generally. See Horwitz, *Transformation I* at 30 (cited in note 22); James Willard Hurst, *Law and the Conditions of Freedom in the Nineteenth-Century United States* 6-32 (Wisconsin 1956). On the instrumental use of patent law to promote economic development in the early nineteenth century, see Edward C. Walterscheid, *To Promote the Progress of Useful Arts: American Patent Law and Administration, 1787-1836 (Part 1)*, 79 J Pat & Trademark Off Society 61, 75-76 (1997), citing *Whitney v Emmett*, 29 F Cases 1074, 1082 (Cir Ct E D Pa 1831) (discussing the role of patent in promoting technological gain by rewarding inventors); Godson, *A Practical Treatise on the Law of Patents* at 19 (cited in note 44) (A patent is “a reward to those who would exert their abilities, employ their time, and spend their money in the production of something new and useful to the community” and is a “recompence” to the inventor.). On the development of the English patent system before 1800 and the English antecedents to the American system, see MacLeod, *Inventing the Industrial Revolution* (cited in note 26).

The transition between the private reward and public benefit views is evident in the opinion of Chancellor Kent in *Livingston*. In referring to steamboats on the Hudson between Albany and New York City, Kent emphasized both that the steamboat “promises to become a great public blessing” and that one must feel “gratitude” toward those “who have carried on their experiment with patient industry, at great expense, under repeated dis-

Even as courts began to realize that control over the production process—and thus craft knowledge—was essential to the employer's right to manage, they might still have been reluctant to reject an employee's ownership of an innovation that was distinct from his general craft knowledge. However, if the innovation or invention were incorporated in the employer's normal processes of production over an extended period, judges were more inclined to see it as an asset of the firm rather than of the employee. To grant the employee an exclusive right to such an invention would be too great an interference with the employer's interest in controlling the business. Indeed, judges likely saw it as overreaching if the employee left for a rival employer and attempted to deny the former employer the right to use the process at all, depriving the public of the benefits of competition.<sup>118</sup> Thus, the *McClurg* headnote's emphasis on the employer's contribution to the invention through wages and time articulated a rationale for the shop right that ultimately persuaded judges and lawyers more than the Court's opinion did. The headnote expressed an emerging sense of the value to employers of owning their employees' brain work as well as their physical work.

Changes in the nature of production associated with the rise of the factory and the spread of the corporate form of ownership helped judges and lawyers portray these cases differently than before. In the past they were seen as a dispute between two individuals, with the employer as a person trying to take an idea that was not his. Now, however, they were portrayed as a dispute between an organization, to which the employee had belonged, and the employee-inventor who was trying to take for himself an idea that was one of the organization's valuable assets.

Finally, both employers and courts began to see employee inventions as a branch of master-servant law. This change in legal category proved to be very significant because it occurred just as the hierarchical law of "master and servant" became more systematized, as legal texts spread that law to employment relations

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appointments . . . ." 9 Johnson at 585. Also, Willard Phillips's 1837 treatise said in the same paragraph both that patents were a "reward" and that a "reason for granting this species of monopoly, is, that the whole community has an interest in the advancement of the useful arts, since the greater the perfection to which they are brought, the greater will be the amount of necessities, conveniences, comforts, luxuries and amusements, within reach of every one . . . ." Phillips, *The Law of Patents for Inventions* at 12 (cited in note 33) (emphasis removed). Both reward and incentive continued to appear in nineteenth century treatises, but ultimately the encouragement rationale became predominant. See Walterscheid, 79 J Pat & Trademark Off Society at 75-76.

<sup>118</sup>The author is indebted to Daniel Ernst for suggesting this.

to which it had not previously applied, and as the nature of employment became more bureaucratized.<sup>119</sup>

The law of shop right today is much as it was in 1900. The Supreme Court's last pronouncement on the subject, involving a dispute between the government and a former employee over airplane radio technology, articulated the rule and rationale on which the courts still rely. The Court made it clear that the basis of the shop right is the employment contract: "The respective rights and obligations of employer and employee" concerning an invention conceived by the employee "spring from the contract of employment."<sup>120</sup> Depending on the circumstances, among the rights the employment contract implicitly gives the employer is a shop right in an employee invention developed on the job. The rationale, the Court made clear, was the employer's financial contribution to the investment: "Since the servant uses his master's time, facilities, and materials to attain a concrete result, the latter is in equity entitled to use that which embodies his own property . . . ."<sup>121</sup> This is the shop right doctrine that exists in every state today,<sup>122</sup> and it represents the culmination of the first major conceptual shift in the ownership of ideas at work.

#### D. Ownership or License: The Inconsistent Treatment of Hirings to Invent

Just after the shop right evolved from an estoppel-based notion to an employment-based one, courts began to permit the employer to claim not merely a license but outright ownership of the employee's inventions if the employee had been "hired to invent." The development of a set of rules for the category of employees

<sup>119</sup> See Sanford M. Jacoby, *Employing Bureaucracy: Managers, Unions, and the Transformation of Work in American Industry, 1900-1945* (Columbia 1985); Tomlins, *Law, Labor, and Ideology* at 259-61 (cited in note 10).

<sup>120</sup> *United States v Dubilier Condenser Corp*, 289 US 178, 187 (1933).

<sup>121</sup> *Id* at 188-89.

<sup>122</sup> See, for example, California: *Banner Metals, Inc v Lockwood*, 178 Cal App 2d 643, 3 Cal Rptr 421, 431 (1960), citing *Dubilier*; Colorado: *Hewett v Samsonite Corp*, 32 Colo App 150, 507 P2d 1119, 1122 (1973), citing *Kinkade v New York Shipbuilding Corp*, 21 NJ 362, 122 A2d 360 (1956); Illinois: *McKerman Co v Gregory*, 252 Ill App 3d 514, 623 NE2d 981, 1004 (1993); New Jersey: *Crowe v M&M/Mars*, 242 NJ Super 592, 577 A2d 1278, 1280 (1990), quoting *Dubilier*; *Kinkade*, 122 A2d at 364-65; New York: *Eenkhorn v New York Telephone Co*, 130 Misc 2d 744, 497 NYS2d 303, 304 (Civ Ct 1986), citing *Dubilier*, *affd*, 148 Misc 2d 999, 568 NYS2d 677, 678 (App Term 1990); Ohio: *Gemco Engineering & Manufacturing Co v Henderson*, 151 Ohio St 95, 84 NE2d 596, 599 (1949), citing *Dubilier*; Pennsylvania: *Aetna-Standard Engineering Co v Rowland*, 343 Pa Super 64, 493 A2d 1375, 1379 (1985), citing *Dubilier*; Texas: *American Medical Electronics, Inc v Korn*, 819 SW2d 573, 575 (Tex Ct App 1991). See generally Annotation, *Application and Effect of "Shop Right Rule" on License Giving Employer Limited Rights in Employees' Inventions and Discoveries*, 61 ALR2d 356, 370 (1958).

who were hired specifically to invent was the second major conceptual shift in the ownership of ideas in the employment relationship. However, the content of the category remained unclear. The line that courts drew (and still draw) was that employers got only a shop right when the employee's hiring was "general," and the employer got ownership when the employee had been hired to devise a particular invention or to develop an employer's idea. The distinction between "general" hirings and "hirings to invent" has always been murky. The flexibility of the rule and its emphasis on broad characterizations of the nature of the employment meant that valuable property rights rested on judges' views about employees' abilities and about whether creativity is a skill that is sold in various types of work relationships. As judges' views of inventorship evolved from an individual genius to a corporate research and development paradigm, the application of the law evolved as well, even though the rule appeared to remain unchanged.<sup>123</sup>

The very earliest published opinions addressing the hiring-to-invent concept were patent infringement cases or appeals from Patent Office interference proceedings. In these cases the courts thought their task was to decide whether the employee or the employer had been *the true* inventor. As discussed above, in a number of opinions from the 1820s through the 1860s,<sup>124</sup> the courts developed the notion that the employee was the inventor if the substance of the invention were his idea, but the employer was the inventor if the main idea were his.<sup>125</sup> The rule was often articulated in explicitly class-biased terms: was the employee "inventive," or was he merely a "servant" with "manual dexterity," a "mere instrument through which [the employer] realizes his idea."<sup>126</sup> Finally, in 1901, a court first stated that in patent interference proceedings where both the employer and employee

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<sup>123</sup> Under the current law, if the employee is hired to engage in general research and development, the inventions likely will belong to the employer, even if the employer did not designate the specific area in which the employee was to invent. See Roger M. Milgrim, 1 *Milgrim on Trade Secrets* § 5.02[4][b] at 5-64-5-65 (Matthew Bender 1994). As explained below, one hundred years ago a court probably would have determined that such a hiring was a general hiring, not a hiring to invent. See text accompanying notes 139-77.

<sup>124</sup> See notes 43-53 and accompanying text.

<sup>125</sup> See, for example, *Dixon*, 7 F Cases at 759; *Alden*, 1 F Cases at 330; *Sparkman*, 22 F Cases at 879; *Goodyear v Day*, 10 F Cases 677, 677 (Cir Ct D NJ 1852); *Teese*, 23 F Cases at 834; *Dental Vulcanite*, 7 F Cases at 502-03.

<sup>126</sup> *Wellman v Blood*, 29 F Cases 628, 631 (Cir Ct DC 1856). See also *King v Gedney*, 14 F Cases 526, 530-31 (Cir Ct DC 1856). In one case, the court described the employee as "a foreigner," "merely a workman or mechanic," and "a rover and a wanderer"; not surprisingly, the court concluded that the inventive idea was the employer's. *Miller v Kelley*, 18 DC App 163, 169-71 (1901).

claimed to be the inventor, "a presumption exists in favor of the employer."<sup>127</sup>

The Supreme Court set the example for this method of analysis in its influential 1868 decision, *Agawam Woollen Co v Jordan*.<sup>128</sup> The Court sought to determine ownership of an invention by assessing the character and abilities of the employee. The alleged infringer in *Agawam* sought to invalidate the patent by arguing that the employee, not the employer-patentee, was the true inventor. The Court ruled that if an employee was hired to work on an invention, the employer owned the right to the resulting invention, at least if the employer supplied the initial idea for the employee's invention. The case involved a "machinist and a manufacturer of textile fabrics" who in 1824 hired a blacksmith to help him devise a modification of the machinery for spinning yarn from wool.<sup>129</sup> The invention devised by the manufacturer and his blacksmith, which was patented in 1826, apparently proved to be quite significant; the Court said that "[t]he patented improvement soon came into universal use, and worked a revolution, both here and in Europe, in the art of manufacturing fibrous yarns."<sup>130</sup> The Court determined that the employer had been the true inventor and the employee had been hired only to assist, and therefore, the employer was entitled to the patent.<sup>131</sup>

*Agawam* and like cases purported to decide only whether the employee or the employer had been the actual inventor of a patented idea by determining which one of them was the sort of person likely to have had such an idea.<sup>132</sup> These cases did not attempt to decide whether the employee or the employer owned an idea when it was clear the employee was the one who originally

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<sup>127</sup> *Miller*, 18 DC App at 170. See also *Jameson v Ellsworth*, 40 DC App 164, 166 (1913) ("[T]he presumption of inventorship is in favor of the employer. Before this rule may be invoked, however, it must appear that the employee was engaged in perfecting a device under the general directions of the employer.").

<sup>128</sup> 74 US 583 (1868).

<sup>129</sup> *Id* at 585-87.

<sup>130</sup> *Id* at 587-88.

<sup>131</sup> The Court articulated the rule for such cases as follows:

[W]here a person has discovered an improved principle in a machine, manufacture, or composition of matter, and employs other persons to assist him in carrying out that principle, and they, in the course of experiments arising from that employment, make valuable discoveries ancillary to the plan and preconceived design of the employer, such suggested improvements are in general to be regarded as the property of the party who discovered the original improved principle, and may be embodied in his patent as a part of his invention.

*Id* at 602-03.

<sup>132</sup> See *Orcutt v McDonald*, 27 DC App 228, 233 (1906); *Kreag v Geen*, 28 DC App 437, 440 (1906).



had the idea. But in the 1890s, these cases became the basis for a rule that an employer owned outright the inventions of any employee whom it had hired specifically to invent. Thus, the courts went from asking whether an idea originated with the employer or employee to declaring that even an idea that clearly originated with the employee was the employer's property. The crossover began with the Supreme Court's *Hapgood* decision in 1886, which, as explained above,<sup>133</sup> was also a leading shop right case.

In *Hapgood*, during the negotiations preceding Hewitt's hiring as superintendent of the plaintiff's manufacturing department, Hewitt touted "his experience in devising and making improvements" in plows.<sup>134</sup> The Court found that the employer relied on these representations in employing Hewitt to "devote his time and services to devising improvements in, and getting up and perfecting, plows adapted to the general trade of the corporation."<sup>135</sup> A few years later, Hewitt and the company president decided the firm should make a new iron riding plow, which Hewitt devised and built with the aid of company employees.<sup>136</sup> After leaving the company, Hewitt applied for and received a patent on the plow and threatened to sue the corporation and its successor for infringement.<sup>137</sup> Hewitt's former employer responded by claiming complete ownership of the patent, not just a shop right (which is what the courts ultimately granted), on the grounds that it had hired Hewitt expressly to invent the plow.<sup>138</sup>

Both the lower court and the Supreme Court rejected the employer's ownership claim. The lower court eventually concluded that Hewitt owned the invention, although it acknowledged that the employer had contributed to the inventive effort by paying Hewitt, providing him with the assistance of other employees, and paying for the materials and labor used in the construction.<sup>139</sup> It explained that while an employer might own its employees' inventions if "they have been hired and paid to exercise their inventive faculties for their employers," that was not the case with Hewitt.<sup>140</sup> Rather, in the court's view, Hewitt's employer sought only Hewitt's "experience in the manufacture and sale of plows, and [his] . . . thorough knowledge of that busi-

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<sup>133</sup> See text accompanying notes 83-86.

<sup>134</sup> 119 US at 229.

<sup>135</sup> *Id.*

<sup>136</sup> *Id.* at 230.

<sup>137</sup> *Id.* at 231.

<sup>138</sup> *Id.* at 231-32.

<sup>139</sup> *Hapgood v Hewitt*, 11 F 422 (Cir Ct D Ind no date).

<sup>140</sup> *Id.* at 424.

ness.<sup>141</sup> The terms of Hewitt's employment did not expressly require him to exercise his "inventive faculties" for his employer, and therefore the employer did not own the patent.<sup>142</sup> The Supreme Court agreed. The Court found no evidence of "any agreement between the corporation and Hewitt that the former was to have the title to his inventions, or to any patent that he might obtain for them."<sup>143</sup>

Both the circuit court and the Supreme Court interpreted the evidence and drew legal conclusions in a manner strikingly different from what today's courts would do. Hewitt and the company president had agreed that the firm should design and manufacture the new plow, and Hewitt thereupon set about doing so on the firm's generous payroll (receiving \$3,000 a year), using the firm's materials and workers. If the case were decided today, courts would likely conclude that Hewitt had been acting on behalf of the firm when he devised the new plow, and therefore that the firm owned the invention. This conclusion would likely be reached either because Hewitt's fiduciary duty as an officer of the firm would prevent him from appropriating for himself the work he had done for the firm or because he had been directed to invent.<sup>144</sup> But in the 1880s, the perception was different. In the first place, Hewitt, not the company or its president, was unquestionably *the* inventor in the nineteenth century individualist understanding of invention, and that was the relevant question under *Agawam*. If the courts began with the idea that the true inventor is entitled to the patent (which is what *Agawam* said) and that invention is an individual rather than a corporate activity, then Hewitt clearly was entitled to the patent. In addition, the courts thought Hewitt was entitled to the patent as a matter of just policy because it was *his* idea. The inventor's claim to ownership of his ideas trumped the firm's investment, the officer's fiduciary duty, and even the notion that Hewitt was a servant employed and paid by his employer to do brain work.

Four years later, the Court began to back away slightly from this statement. In *Solomons v United States*,<sup>145</sup> the Supreme Court attempted to reconcile the various cases on employee inventions and to chart out a structure for deciding when the employment relationship entitled the employer to a shop right or to

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<sup>141</sup> *Id.*

<sup>142</sup> *Id.*

<sup>143</sup> 119 US at 233.

<sup>144</sup> See, for example, *Standard Parts Co v Peck*, 264 US 52, 59-60 (1924); *Muenzer v W.F. & John Barnes Co*, 9 Ill App 2d 391, 133 NE2d 312, 318-21 (1956).

<sup>145</sup> 137 US 342 (1890).

ownership of employee inventions. The case involved the chief of the Bureau of Engraving and Printing, who had designed a self-canceling stamp at the request of the government.<sup>146</sup> Although the House Ways and Means Committee and the Commissioner of Internal Revenue approved the design for the government's use, and employees of the Bureau of Engraving and Printing prepared a die for the stamp using government property, the Court held that the government had only a shop right to use the stamp, not ownership of it.<sup>147</sup>

The Court began by postulating that an employee's inventions are his own:

The government has no more power to appropriate a man's property invested in a patent than it has to take his property invested in real estate; nor does the mere fact that an inventor is at the time of his invention in the employ of the government transfer to it any title to, or interest in it. An employé, performing all the duties assigned to him in his department of service, may exercise his inventive faculties in any direction he chooses, with the assurance that whatever invention he may thus conceive and perfect is his individual property.<sup>148</sup>

The Court then said, however, that when an employee is hired to invent something in particular, the employer would own the invention, not just a right to use it. "That which he has been employed and paid to accomplish becomes, when accomplished, the property of his employer. Whatever rights as an individual he may have had in and to his inventive powers, and that which they are able to accomplish, he has sold in advance to his employer."<sup>149</sup>

If the Court had actually applied this rule to the facts of the case, it could have concluded that the employer owned the stamp. Although the employee-inventor had not been *hired* specifically to invent (as the head of a government bureau, he presumably had a great many other responsibilities), the Secretary of the Treasury, the Commissioner of Internal Revenue, and their deputies had specifically directed him to design a self-canceling stamp.<sup>150</sup> The Court could easily have viewed his employment as encompassing the specific task of invention. Thus, the actual holding of *Solo-*

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<sup>146</sup> Id at 342-43

<sup>147</sup> Id at 343-45, 347-48.

<sup>148</sup> Id at 346.

<sup>149</sup> Id.

<sup>150</sup> Id at 344.

*mons* was less sympathetic to employer ownership than was the rule in the opinion. The opinion reveals a Court of two minds on the issue of employee inventions. On the one hand, the law of master and servant would seem to give employers broad rights in their employees' work product; on the other, the Court cleaved to the idea that an inventor had a right to his inventions.

Between 1890 and 1920, courts around the country decided dozens of cases on this issue. By the end of that time courts came to regard the hiring-to-invent inquiry as calling for an examination of the employment contract,<sup>151</sup> but the turn-of-the-century cases did not. They instead employed two strategies to determine when the employer was entitled to the invention and when he was entitled to simply a license. In a few cases, the courts focused mainly on the abilities of the employee. In most, the courts examined the nature of the job or the nature of the employment—whether an employee had been hired either to invent a specific thing or to exercise his “inventive faculties.” The factual inquiry left ample room for the operation of judicial class bias in characterizing the nature of the employment, the employee's abilities, and his position in the firm.<sup>152</sup>

A minority of courts decided whether an employee had been hired to invent by evaluating the character or ability of the employee as a person. As a 1903 law review article phrased it, the main consideration in assessing conflicting employer and employee claims to the same invention was: “What sort of man mentally, *i.e.* with reference to his inventive capacity, is the employer; what sort of man mentally is the employee . . . ?”<sup>153</sup> A famous 1920 California case is illustrative.<sup>154</sup> A Hollywood production company successfully persuaded a court that Cecil B. DeMille, rather than an electrician, had invented a device for gradually dissolving the lights. The Hollywood movie company's lawyers had little trouble persuading the court that DeMille, not the anonymous electrician, was the genius behind the advance in motion picture technology.<sup>155</sup> The court concluded that DeMille had conceived the in-

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<sup>151</sup> See cases cited in notes 259-70.

<sup>152</sup> As one early law review commentator said, determining ownership was not a problem in the cases “where the employer does all the inventing and the employee does only work requiring ‘mechanical skill.’ As soon, however, as the employee begins to think that his ‘mechanical skill’ has turned to inventive skill the trouble begins . . . .” Dwight B. Cheever, *The Rights of Employer and Employee to Inventions Made by Either During the Relationship*, 1 Mich L Rev 384, 385 (1903). That an employee might indeed have inventive skill seemed beyond the imagination of the writer.

<sup>153</sup> *Id.* at 392.

<sup>154</sup> *Famous Players-Lasky Corp v Ewing*, 49 Cal App 676, 194 P 65 (1920).

<sup>155</sup> 194 P at 65-66.

vention and that the electrician had merely put the idea into practice as part of his employment "to improve the light in every way possible and to use his expert knowledge and ability in that direction."<sup>156</sup>

Some judges combined examination of the employee's abilities with consideration of whether particular occupational categories involved the use of "inventive skill." In one 1891 New Jersey case, for example, an employee had been hired as a superintendent in a shop manufacturing gas motors for streetcars. The court puzzled over whether a superintendent in such a shop would exercise "inventive faculties."<sup>157</sup> The court decided a shop foreman would not be hired to invent.<sup>158</sup> In a similar 1896 New York case, the judge tried to decide whether a machine shop foreman who devised an improved machine for making radiators had been hired to invent.<sup>159</sup> The employer claimed it had hired the foreman because he could operate malfunctioning machines in the shop. The foreman and his family testified by affidavit that he did not discuss any invention in either of the two conversations he had with his employer prior to entering his employ.<sup>160</sup> The court found "untenable" the employer's argument that he had purchased the employee's inventive faculties, "because the rate of compensation, \$3.50 per day, was not excessive or unusual in the employment of men capable of taking charge of and operating an important manufacturing plant."<sup>161</sup>

Some cases claimed to focus on what the court regarded as the express or implied terms of employment in the parties' contract. Yet to decide what those terms were, the courts relied on assessments of the employee's abilities, job title, or status. In a 1904 case, for example, the employer tried unsuccessfully to claim ownership of the invention by alleging that a mechanical engineer had been hired "to give his time, skill, and attention and inventive ability' to the service of his employer in and about

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<sup>156</sup> *Id.* at 66.

<sup>157</sup> *Connelly Manufacturing Co v Wattles*, 49 NJ Eq 92, 23 A 123, 124 (1891).

<sup>158</sup> The employee testified that in the negotiations for his employment contract nothing was "said respecting his inventive faculties, or the employment thereof, or that he would be required, either as his sole work or as a part of his work, to try to perfect the motor or to cure its faults . . ." Naturally, the employer saw it differently. The company vice president testified that the defendant "was to give us the benefit of his whole time, skill, knowledge and ability in improving and perfecting our motor; and it was our distinct understanding that, as the consideration for giving him a larger salary than he demanded, we should secure, with respect to our motor, all the fruits of his skill and inventive ability as applied to it under our supervision." 23 A at 124.

<sup>159</sup> *Niagara Radiator Co v Meyers*, 16 Misc 593, 40 NYS 572, 573-74 (S Ct 1896).

<sup>160</sup> 40 NYS at 575.

<sup>161</sup> *Id.*

cheapening and improving the process used in his business."<sup>162</sup> The court decided this was not a sufficient allegation of a hiring specifically to invent and awarded only a shop right.<sup>163</sup> The employee, the court found, only "was expected to devote his time and service to the cheapening of the processes."<sup>164</sup> Because "nothing was said upon the subject of inventions, or the use of his inventive faculties for their benefit," the court decided that the agreement "to devote his knowledge, skill and service to the cheapening and improving of the processes used in the factory" did not encompass an agreement to use "the inventive faculty also."<sup>165</sup>

When a manufacturer hired an employee to design a machine to manufacture the employer's product, in most cases the courts concluded that such an employment granted the manufacturer only a shop right in the machine, not ownership of the patent.<sup>166</sup> As the Massachusetts Supreme Judicial Court stated in its 1908

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<sup>162</sup> *Barber*, 129 F at 372.

<sup>163</sup> *Id* at 373.

<sup>164</sup> *Id*.

<sup>165</sup> *Id*. This was also one of a number of cases that decided whether an agreement to "develop" the employer's process or product constituted a hiring to invent. In *Annin*, 44 Hun at 353-54, the New York Supreme Court found that an employee paid a weekly wage to "develop" the employer's wheelbarrow and truck business had been hired specifically to assist in the invention of a better wheelbarrow and truck. The court therefore ordered the employee to assign the patent to the employer:

The special service of inventing is the entire scope of the employment. There is no room left within the employment for inventing on his own hook. The servant has no right to think or invent for himself on this particular subject matter in hand. He must get out of such a relation before he can claim the product of his work under such an employment. He cannot carry off both his salary and the only valuable product of his work under such an employment, leaving his master with his useless models, the results of his uselessly spent money on tools, machinery, time, labor of self and employees, with only a license or shop right which is not assignable or useful in any way save to himself.

*Id* at 356.

Until the 1920s, courts generally construed an employment "to develop" the employer's business or the employer's product as a general hiring, not a hiring to invent. The employers obtained a shop right in the patents for inventions the employees developed during such employment, but the employers did not ordinarily have the right to the patents themselves. This rather pro-employee rule persisted until the Supreme Court rejected it in its influential 1924 decision in *Standard Parts Co*, 264 US 52, discussed in text accompanying notes 201-04.

<sup>166</sup> See, for example, *Whiting*, 29 F Cases at 1060, in which the court determined that an employee hired specifically to invent owned the patent because the invention at issue was not within the employer's principal line of business. *Whiting*, a manufacturer of dry goods, hired Howard to make improvements on a sewing machine in order to facilitate the sewing of ruffles. Although Howard assigned a one-half interest in the patented improvement to *Whiting*, *Whiting* sued for infringement. The court rejected the infringement claim: "[T]here would seem to be no good reason why Howard should not receive some benefit from the use of his inventions in other factories than *Whiting's*, and from the sale of his inventions to others." *Id*.

decision of this category, *American Circular Loom Co v Wilson*,<sup>167</sup> an employee who invented an improved machine to make his employer's product owned the machine patent because he had not been hired specifically to invent a machine, but only to make the product (which in that case was tubing to cover electric wires). The court explained:

How far the rule will be held to be applicable where it appears that by the express terms of the hiring the employee was to exercise his inventive faculties with reference to the specific inventions in question for the sole benefit of his employer, we need not now consider, for that question does not arise in this case.<sup>168</sup>

In all of these cases, the spoken or unspoken rationale for the courts' reluctance to find that the employer owned an improvement that an employee designed was that an employee's idea was his inalienable property. The Wisconsin Supreme Court in 1887 said so explicitly when it rejected an employer's claim that its financial and material support of an employee's inventive process entitled it to own inventions developed on the job. The court emphasized that the employer's contribution by way of time and materials was less significant than the employee's contribution of the novel *idea*: "The mere fact that, in making the invention, an employ   uses the materials of his employer, and is aided by the services and suggestions of his co-employ  s and employer in perfecting and bringing the same into successful use, is insufficient to preclude him from all right thereto as an inventor."<sup>169</sup> The employer's claim that its contribution of material and labor entitled it to own the product, "confound[s] the machine with the invention it embodies. Of course there must be a machine which will operate before it can be patented. That implies material, workmanship, and skill combined. But such combination of itself is not enough to secure a patent."<sup>170</sup> Because the employee alone supplied the idea, the court felt the employee alone should own the patent. A patentable invention "must also embody an original

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<sup>167</sup> 198 Mass 182, 84 NE 133 (1908).

<sup>168</sup> 84 NE at 135.

<sup>169</sup> *Fuller & Johnson Manufacturing Co v Bartlett*, 68 Wis 73, 31 NW 747, 752 (1887). In that case, an employee of a harvesting machinery firm devised a grasping device to improve the operation of the firm's reapers. Officers of the firm told the employee that he had a right neither to his invention nor to the patent because he had made the invention while in their employ and had used the firm's materials. The employee's invention was incorporated into the firm's reapers, and the firm's patent attorneys applied for a patent on the device. The employee refused to assign the patent to the firm. 31 NW at 747-49.

<sup>170</sup> *Id.* at 753.

conception of a new and useful method of doing a specific thing. It is this conception so embodied, evolved from the inventive faculties of the defendant, which constituted the invention in question."<sup>171</sup> The court dismissed the employer's argument that the employee's creativity was the product of "instruction, experience, and knowledge" that the employer had given. The court found these things "may aid and stimulate invention, but are no part of it."<sup>172</sup>

These pre-1920 courts rarely found that the employee had been hired to invent unless there was an explicit agreement covering ownership of inventions. A general understanding that an employee was hired to develop a product, machine, or process usually was not enough to constitute a hiring to invent.<sup>173</sup> For example, in an 1895 case the employer alleged that it had hired the inventor, a machinist, for the express purpose of building an improved power press based on a rough idea.<sup>174</sup> The court, however, awarded only a license, because there was no express agreement that the employer would own the resulting patent.<sup>175</sup> Similarly, a 1910 Eighth Circuit decision held that a firm's director and business manager who invented a new furnace grate—the firm's product—while on the job was employed only generally and had not contracted to give his employer "the fruit of his inventive genius."<sup>176</sup> He thus did not have to assign his patent to his employer.<sup>177</sup>

Sometime after 1910 the trend in the cases changed. Although the doctrine itself remained the same, courts evaluated the facts differently. The employers' lawyers apparently learned to portray invention more as a collective and corporate-sponsored enterprise and to emphasize the contributions of others in the invention that the employee claimed for himself.

A good example of this change is the Massachusetts Supreme Judicial Court's 1921 decision in *Wireless Specialty Apparatus Co v Mica Condenser Co*.<sup>178</sup> The court surveyed the law and identified

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<sup>171</sup> Id.

<sup>172</sup> Id. See also *Eustis Manufacturing Co v Eustis*, 51 NJ Eq 565, 27 A 439, 441 (1893) (granting license but not ownership).

<sup>173</sup> See, for example, *Niagara Radiator Co*, 40 NYS at 574 (stating that employee is entitled to a "presumption of ownership" of invention and that the employer's ownership must be "clearly established" to rebut presumption).

<sup>174</sup> *Withington-Cooley Manufacturing Co*, 68 F at 501-02.

<sup>175</sup> Id.

<sup>176</sup> *Johnson Furnace & Engineering Co v Western Furnace Co*, 178 F 819, 823 (8th Cir 1910).

<sup>177</sup> Id.

<sup>178</sup> 239 Mass 158, 131 NE 307 (1921).



two lines of authority. The first held that "[a]n invention made by an employee, in the course of his employment and at his employer's expense" was "the property of the inventor unless he has by the terms of his employment, or otherwise, agreed to transfer to his employer its ownership as distinguished from its use."<sup>179</sup> The second, which became far more significant than the first, involved employees "wholly engaged in 'experimental work,'" whose job was to invent; in those cases, "the nature of the employment impresses on the employee such a relationship of trust and confidence as estops him from claiming as his own property that which he has brought into being solely for the benefit and at the express procurement of his employer."<sup>180</sup> As discussed below, however, the opinion fudged on the crucial question of how to distinguish ordinary employment from experimental work.

The court's recognition that some employees are hired to engage in "experimental work" reflected an awareness of how the nature of firms had changed and corporate-sponsored research had grown:

During the Great War the plaintiff made radio condensers for the United States government. On the signing of the armistice, it became apparent that this industry would be seriously affected if not ended, and the plaintiff's officers conceived the idea of producing magneto condensers to be sold to manufacturers of electrical apparatus. By June, 1919, the six employees then remaining in the plaintiff's condenser department were employed in the experimental work in developing a method of manufacturing such condensers. . . . The work was substantially all performed in the plaintiff's shop, with its tools, at its expense, and under the general direction and supervision of one Priess, its chief engineer.<sup>181</sup>

After describing the inventions, the court observed that they were "in the main" those of one of the six employees engaged in "experimental work" and that some of them were the joint work of several of the employees.<sup>182</sup> In concluding that the firm, not the individuals, owned the inventions, the court's legal analysis reflected a modern view of invention as a collective, corporate proj-

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<sup>179</sup> 131 NE at 308. The Massachusetts high court placed its own 1908 pro-employee decision, *American Circular Loom*, into this category. The court distinguished the case by observing that it left open how the rule would apply when an employee was hired expressly for his creative talents. Id at 309.

<sup>180</sup> Id at 308-09.

<sup>181</sup> Id at 307-08.

<sup>182</sup> Id at 308.

ect, rather than the "inventive genius" of the individual. Although separated by just thirteen years, the contrast between *American Circular Loom's* view in 1908 of invention as the inalienable product of individual genius and *Wireless Specialty's* corporatist view in 1921 of invention as a collective enterprise encapsulates the difference between the nineteenth and twentieth century views of employment and invention.<sup>183</sup>

One way that courts began to shift the perception of the facts was by focusing on the employee's relationship to the firm rather than on whether the employee was hired to invent. One example is *Dowse v Federal Rubber Co.*,<sup>184</sup> a 1918 Illinois federal court decision. *Dowse* considered whether a rubber tire firm owned the patent, or only a shop right, to an improved automobile tire invented by Dowse, a principal of the firm. The court determined that the "all-important question is Dowse's relation to the tire-manufacturing business. If he was only a hired man, taking orders as to his work from another officer or employé, the invention

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<sup>183</sup>That the transition was neither sudden nor uncontested appears from two widely cited cases from federal courts in Pennsylvania. In the first, *Pressed Steel Car Co v Hansen*, 128 F 444 (Cir Ct W D Pa 1904), the court declined to order the erstwhile chief engineer of the plaintiff company to transfer six patents to the employer. The employer alleged that the engineer was bound by an oral contract to "devote his entire time, ability, and skill" to the firm's "business and its advancement" and that "all inventions and improvements that he might make during the period of his employment, and all letters patent that might be obtained therefor, should be the sole property of" the company. *Id.* at 444-45. The Third Circuit, affirming, also declined to award the patent to the employer:

We have been referred to no case, nor have we been able to discover one in which, apart from express contract or agreement, and upon the mere general relation of employer and employé, and of the facts and circumstances attending it, the employer has been vested with the entire property right in the invention and patent monopoly of the employé, or with anything more than a shop right, or irrevocable license, to use the patented machine. Such a right in the employer the employé may be estopped to deny, by the fact of his employment and his conduct in relation to the use of the inventions by his employer; and to that extent and no farther have the cases gone.

137 F 403, 415-16 (3d Cir 1905). Fifteen years later, a district court in the Middle District of Pennsylvania concluded that facts less clear than those in *Pressed Steel* did establish the existence of an employment to invent. But the Third Circuit reversed and awarded only a shop right. Ingle, the plaintiff in the patent infringement suit, had been employed as a designer for the predecessor of Landis Tool Company and had designed a machine for them. The district court held that the employer owned the patent for the machine because the employee had been hired to design it. "He was paid for what he accomplished, and accomplished what he was paid for—to improve the machine of his employer, in order that it might have greater value as such, and be more salable as such machine." Though there was no written agreement concerning ownership of patents, the court concluded that "the circumstances attending his employment, [and] the nature of the work he performed" made clear that the employer should own the results. *Ingle v Landis Tool Co*, 262 F 150, 152-53 (M D Pa 1919). The Third Circuit disagreed and held the employer was entitled on such facts only to a shop right, not to ownership of the patent. 272 F 464, 465 (3d Cir 1921).

<sup>184</sup>254 F 308 (N D Ill 1918).

belonged to him, leaving only an implied license or shop right to the corporation, and this right was only personal to it, incapable of being assigned.<sup>185</sup> But, if he was “more than a mere employ  , having the main responsibility to make the business successful, then he should be compelled to assign the patent.”<sup>186</sup> “[T]he real test,” the court continued, “is whether Dowse occupied such a relation to the corporation that he was its alter ego, in such a capacity that it is only consistent with good faith that he should recognize its ownership of the patent issued to him.”<sup>187</sup> The court concluded that Dowse was too high up in the company and in too important a position to regard him as a “mere employ  ” and ordered him to assign the patent.<sup>188</sup>

Focusing on the employee’s position in the firm was, of course, no less indeterminate than focusing on whether the employer had hired the employee as an inventor. Not surprisingly, other courts drew precisely the opposite conclusion from the one the *Dowse* court drew about whether high-level employees retained exclusive or indeed any ownership of their inventions.<sup>189</sup> For example, a 1922 Michigan Supreme Court decision, *Detroit Testing Laboratory v Robison*,<sup>190</sup> purported to accept in principle that an employer might obtain rights to the inventions of its high-level employees. Yet the court concluded that a chemist who was not merely an employee, but also a stockholder, director, and

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<sup>185</sup> Id at 309.

<sup>186</sup> Id.

<sup>187</sup> Id at 310.

<sup>188</sup> Id at 315-16.

<sup>189</sup> See, for example, *Doscher v Phelps Guardant Time Lock Co*, 89 Misc 561, 153 NYS 710, 711-12 (1915) (holding that the company’s president and general manager could not be compelled to assign his patent to a time lock, where his work on the invention was not related to his duties as general manager; finding fiduciary duties of the president and general manager not to be a sufficient reason to compel assignment), affd, 172 App Div 954, 157 NYS 1123 (1916). As one court summed it up in 1941, an executive “is not the type of employee against whom shop rights are most naturally to be imputed.” *Dysart v Remington Rand, Inc*, 40 F Supp 596, 601 (D Conn 1941).

Massachusetts also rejected the notion that the inventions of an employee in a confidential relationship or a high corporate position belong to the employer. In *American Circular Loom Co*, the court held that the defendant, a director of the plaintiff firm and the superintendent of its manufacturing department, owned the right to an invention for a machine to make circular tubing, which the plaintiff firm had been manufacturing with another machine under another patent. 84 NE at 135. The court held that the employee-inventor owned the patent, even though “[o]ne of the defendant’s duties under his employment was to look after the plaintiff’s machinery and to” improve it; the expenses of procuring the patent were paid by the employer; and “[m]any machines embodying the invention and built under the patent have been constructed under the direction and supervision of the defendant at the expense of the plaintiff, and have been used by it in its business with his knowledge and consent; and the success of its business has largely depended upon its use of these machines.” Id.

<sup>190</sup> 221 Mich 442, 191 NW 218 (1922).

officer, owned his invention.<sup>191</sup> The chemist, whose written contract required him to “devote his entire time and attention to the development and supervision of [the employer’s] dairy and food department and to cooperate in its general line of business,” discovered a method for improving the taste of coffee beans.<sup>192</sup> The idea occurred to him while at a business lunch with someone in the coffee business, who said that coffee importers had discovered that coffee that spent longer in the hold of a ship tasted better than coffee that had been shipped quickly.<sup>193</sup> The chemist, suspecting the reason was that micro-organisms affected the coffee in the ship’s hold over a period of months, developed a culture in the firm’s labs to duplicate the effect.<sup>194</sup> Although the development of the coffee culture would seem to be within the company’s business, and thus within the terms of Robison’s contract, the court concluded that his invention belonged to him, not to the firm.<sup>195</sup>

In so concluding, the court portrayed the inventor as just a “hired man” who “was free to exercise his inventive genius.”<sup>196</sup> In thus individualizing him, and in downplaying his relatively high position in the firm, the court minimized the firm’s contribution to the invention, the close relationship between the invention and the firm’s business, and Robison’s duty as a fiduciary of the firm:

He was not hired to exercise his inventive genius in the discovery of patentable ideas for plaintiff. His skill as a chemist and bacteriologist, and application thereof to the business he was employed to conduct, could have no relation to his inventive faculties, even though his genius was awakened or quickened by suggestion arising in the course of the employment, unless made so by contract.<sup>197</sup>

Holding otherwise, in the court’s view, would deprive Robison of the right to think freely, of “the right to reason from effect to cause, and upon discovering a cause producing an effect, and a method of commercializing the same, [to] constitute the result his own property[.]”<sup>198</sup>

The court distinguished *Dowse* on the basis that Robison’s “invention was not essential to the conduct of the business car-

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<sup>191</sup> 191 NW at 219-20.

<sup>192</sup> *Id.* at 219.

<sup>193</sup> *Id.*

<sup>194</sup> *Id.*

<sup>195</sup> *Id.* at 219-20.

<sup>196</sup> *Id.* at 219.

<sup>197</sup> *Id.*

<sup>198</sup> *Id.*

ried on by plaintiff. Neither was it discovered under an employment or, in the exercise of, an official duty in seeking after an essential necessary to the business of plaintiff."<sup>199</sup> The court also rejected the contention that, as a corporate officer, Robison owed a fiduciary duty to the firm to assign the patent:

The company was conducting a laboratory business and was entitled to have the loyal services of its officers, but such services did not, and could not, reach and encompass the inventive faculties of its officers. Mr. Robison owed no duty to the company to exercise his inventive genius in its behalf, and therefore breached no duty in taking for his own the thought he developed into a patentable creation.<sup>200</sup>

In summary, from the late 1880s until the middle 1920s, courts employed a highly fact-specific and unpredictable inquiry for determining whether an employee had been hired to invent or had simply invented in the context of a general employment. Some cases focused on the employee's abilities, some on the nature of the employment, and others on the employee's relationship to the firm. In all, the courts' perception of the individualistic nature of invention and of the desirable degree of subordination or independence of the employee or class of employees profoundly influenced the outcomes of the cases.

The indeterminacy of this approach became apparent to judges and commentators alike. The struggle to decide cases based on factual assumptions about the inventive process and the employment relationship failed to produce a useful heuristic device; as a result, courts searched for a different legal structure. The developing law and discourse of contract offered an attractive alternative. Gradually, courts ceased trying to allocate invention rights by analyzing characteristics of the employee and his work and instead sought signs of an express or implied contract.

The Supreme Court's decision in *Standard Parts Co v Peck*<sup>201</sup> heralded both the end of judicial solicitude toward employee-inventors and this transition to a contractual analysis. Peck, a designer of machinery, was employed under a written contract requiring him "to devote his time to the development of a process and machinery for the production of the front spring now used on the product of the Ford Motor Company."<sup>202</sup> The Sixth Circuit concluded that, as the caselaw then stood, this was not a hiring to

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<sup>199</sup> Id at 220.

<sup>200</sup> Id.

<sup>201</sup> 264 US 52 (1924).

<sup>202</sup> Id at 59 (quoting the contract).

invent,<sup>203</sup> but the Supreme Court reversed, concluding that the employee had been hired to invent and that the employer had therefore purchased the product of his work.<sup>204</sup>

After *Standard Parts*, courts began to resolve disputes over ownership of employee inventions by analyzing what they supposed were the intended terms of the employment contract rather than, as had been the case, by applying a set of presumptions in favor of employee ownership. At the same time, employers began to use contracts more often to require employees to assign patent rights, as discussed below. This change in how the courts and employers treated the concept of a hiring to invent marked the transition from the dominance of the shop right to the dominance of the pre-invention assignment agreement.<sup>205</sup>

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<sup>203</sup> *Peck v Standard Parts Co*, 282 F 443, 453 (6th Cir 1922).

<sup>204</sup> *Standard Parts*, 264 US at 59-60.

<sup>205</sup> Employers and employees also contested ownership of patents in contexts other than infringement actions or disputes about assignments or royalties. An 1876 Missouri case, *Green*, 1 Mo App 202, involving the employer and employee's conflicting claims to a patent, did not address ownership of the patent; rather, the case addressed whether the employee breached his employment contract by allegedly fraudulently procuring a patent on an idea that the employer claimed as its own. The employee sued for unpaid wages, and the employer defended on the ground that the employee's allegedly wrongful effort to patent the employer's idea was a breach of contract entitling the employer to withhold the wages. *Id* at 203-04. While declining for jurisdictional reasons to determine whether the patent properly belonged to the employer or the employee, the court simply concluded:

We do not see in plaintiff's alleged fraudulent procurement of a patent any breach of the contract . . . . It is not said that plaintiff promised defendant not to apply for a patent. He was under the same general obligations not to defraud defendant in this matter which the law imposes upon all citizens. But this obligation was not created or increased by the contract of hiring . . . .

*Id* at 205.

In a similar case thirteen years later, a New York court reached the same result. The court concluded that a research chemist's allegedly wrongful failure to assign a patent was not a ground for withholding wages, and that, under *Hapgood*, the employer had no right to the chemist's patent in the first place. *Clark v Fernoline Chemical Co*, 5 NYS 190, 191 (NY S Ct 1889). This latter point is certainly a plausible reading of *Hapgood*, but the employer alleged that the chemist had been hired to "work with the defendant's products, and endeavor to develop and discover new products and processes for the benefit of the defendant." *Id*.

In light of the pro-employer at will rule (which developed during that era) and the courts' hostility at that time to claims for unpaid wages by employees who quit, the courts' sympathetic responses to the claims in *Green* and *Clark* are surprising. On the at will rule, see *Wood I* § 134 at 271-74 (cited in note 31); *Wood II* § 136 at 282-86 (cited in note 31). See also Deborah A. Ballam, *The Development of the Employment At Will Rule Revisited: A Challenge to Its Origins As Based In the Development of Advanced Capitalism*, 13 Hofstra Labor L J 75, 86-98 (1995) (arguing that New York has followed the at will rule since the colonial era); Jay M. Feinman, *The Development of the Employment at Will Rule*, 20 Am J Legal Hist 118, 122-29 (1976). On recovery of wages by employees who quit, see Wythe Holt, *Recovery by the Worker Who Quits: A Comparison of the Mainstream, Legal Realist, and Critical Legal Studies Approaches to a Problem of Nineteenth Century Contract Law*, 1986 Wis L Rev 677, 679-99.

## II. CONTRACTUAL DETERMINATION OF OWNERSHIP OF INVENTIONS

A naked assignment or agreement to assign, in gross, a man's future labors as an author or inventor,—in other words, a mortgage on a man's brain, to bind all its future products,—does not address itself favorably to our consideration.

Justice Bradley<sup>206</sup>

We have seen the rise of two "default" rules for determining ownership of employee inventions. First, the employee owns his invention if he is hired "generally" rather than to invent a specific thing; second, the employee's use of the employer's facility, work time, or materials entitles the employer to claim only a shop right or license, not ownership. These are the rules that for the last ninety years or so have determined ownership of inventions—except when the court decided that the employee and employer had agreed otherwise. From the standpoint of employers seeking control over commercially valuable technology, the default rules have always had two serious flaws. First, they are relatively protective of employee-inventors, and second, they are notoriously flexible and indeterminate, as noted above, impeding planning and inviting expensive litigation.

Yet these rules endured even in the face of severe criticism. Their persistence may be attributed in part to their malleability, which allowed courts hostile to one side or the other to follow the law and yet to reach a desired outcome. Perhaps, too, their endurance can be ascribed to the rhetorical force of the notion that inventors—even when employees—should own their ideas in a country that still believes in the labor theory of value and the myth of the heroic inventor. But, more significantly, these rules most likely lasted because employers eventually figured out how to avoid them.

Employers, lawyers, and courts concerned with giving employers more control over employees' inventions began to use the practice and the discourse of contract to get around the default rules. Employers created, lawyers emphasized, and courts enforced express agreements that any employee's inventions would belong to the employer. More significantly, whether or not an express agreement regarding employee inventions *in fact* existed, lawyers and judges increasingly relied on implied contracts or understandings between the employer and employee that the in-

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<sup>206</sup> *Aspinwall Manufacturing Co v Gill*, 32 F 697, 700 (Cir Ct D NJ 1887).

ventions would belong to the employer. Contract allowed courts to leave the default rules untouched, to increase the employer's rights over employee inventions, and, most significantly, to make this shift in ownership of ideas appear to be the product of free choice and arms-length negotiation.

Although the use of express and implied contract concepts to allocate invention rights increased at the turn of the century, it was not a completely new practice. From the beginning, judges occasionally regarded ownership of the inventions of an employee-inventor as a question of contract law when the parties had an explicit agreement covering employee inventions.<sup>207</sup> But express contract cases were rare until the early to mid-twentieth century, and courts seldom invoked a notion of implied contract. Compared to the large number of published nineteenth century opinions concerning licenses or alleged hirings specifically to invent, the number concerning contracts allocating invention rights between employer and employee was small.<sup>208</sup> The interpretation and enforcement of patent assignment contracts in the context of employment was not even mentioned in the antebellum patent treatises.<sup>209</sup>

By the second decade of the twentieth century, however, courts were more likely to conclude that the parties had an express or implied agreement granting ownership of an invention to

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<sup>207</sup> See, for example, *id.* at 700-01; *Continental Wind Mill Co v Empire Wind Mill Co*, 6 F Cases 366, 367 (Cir Ct N D NY 1871) (finding agreement that employee would receive \$500 for invention); *Wilkens v Spafford*, 29 F Cases 1242, 1243 (1878) (finding that employee was hired to invent and holding that the employment contract provided employer would have inventions). In neither of these cases did the court order the former employee to assign the patent. In *Wilkens*, the employer sued to establish his right to use the patented machines built while the defendant was in his employ. It is unclear whether the employer sought assignment of the patents, but the court awarded only an "exclusive license" to use the machines. 29 F Cases at 1244. In *Continental Wind Mill*, the former employee sued for infringement of a patent for an invention he made while employed by the defendant, and the court dismissed the suit because the employer had at minimum a license to use and sell the invention. 6 F Cases at 368. This left the employee free to use and sell it too.

A case involving an express contract was among the Supreme Court's earliest cases concerning ownership of employees' inventions. In *Appleton v Bacon*, 67 US 699, 700-02 (1862), the Court resolved conflicting claims of two parties, both of whom had employed the inventor, and both of whom had express contracts providing that his inventions would be their property. The question the Court resolved was simply one of fact: who was the inventor working for at the time he developed the patented invention?

<sup>208</sup> Depending on how one counts, there were roughly ten or fifteen published opinions before 1900. The counting depends on whether one treats cases involving hirings to invent as involving a contract allocating invention rights. Today, hirings to invent would usually be treated as such contractual allocations, but that was not the case in the nineteenth century, so I did not include them in the count. For examples of cases, see note 207.

<sup>209</sup> See, for example, Phillips, *The Law of Patents for Inventions* at 342-57 (cited in note 33) (discussing patent assignment but not mentioning employment contract context).



the employer. Although express contracts assigning inventions certainly had become more common as a business practice, the courts' increased reliance on implied contract notions reflected a shift in the perception of the employment relationship away from the status notions of master-servant law toward the contractual notions of modern employment law. In other words, perceptions may have changed as much as employment actually did. The rising significance of contract in allocating ownership of employee inventions was a phenomenon of both changing legal discourse and changing business practice.<sup>210</sup> Contract came in the early twentieth century to be the dominant legal description of the employment relationship,<sup>211</sup> and this ultimately influenced the way courts approached ownership of inventions and intellectual property in employment.

The first published academic effort to catalogue and reconcile the cases on ownership of inventions in the employment context, which appeared in the 1903 *Michigan Law Review*, reflected the ascendance of contract.<sup>212</sup> The author asserted that ownership of inventions was a question of contract, express or implied.<sup>213</sup> The fact of employment did not alter the inventor's property in his inventions "outside the scope of the employment,"<sup>214</sup> the author contended, but an implied contract could. The author did not explain how courts determined which inventions were developed within the scope of employment and which were not. Nor did he suggest when an implied contract allocated invention rights. Rather, he said only that the essential considerations included what the em-

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<sup>210</sup> Prior to 1890, only a small proportion of patent assignments were made by employees assigning their patents to their employers. Although the proportion of employee-inventors who transferred patent rights to their firms increased after 1890, the numbers remained small into the early twentieth century. See Lamoreaux and Sokoloff, *Inventors, Firms, and the Market for Technology* (cited in note 36).

<sup>211</sup> John Orth has recently written about the development of the law of contract from its origins in the common law of property. He argues that the reconceptualization of labor in contract terms over the course of the nineteenth century played an important role in the development of the law of contract generally, and that the persistence of archaic property notions influenced the assumed content of the employment contract. Orth, *Contract and the Common Law* (cited in note 20). On the evolution of contract as a legal concept and as a social structure in the employment relationship, see Philip Selznick, *Law, Society, and Industrial Justice* 52-72 (Russell Sage 1969).

<sup>212</sup> Cheever, 1 Mich L Rev at 384 (cited in note 152). On the tendency of scholars toward systematization and abstraction in organizing whole fields of law during the 1870-1900 period, see Morton J. Horwitz, *The Transformation of American Law, 1870-1960: The Crisis of Legal Orthodoxy* 12-14 (Oxford 1992) ("Transformation II").

<sup>213</sup> Cheever, 1 Mich L Rev at 385 (cited in note 152) ("The subject thus being limited to one of contract, expressed or implied, it may be most conveniently treated by considering it under two headings, depending upon whether the employee is specially hired to make or perfect inventions, or makes them while engaged in the course of ordinary employment.").

<sup>214</sup> Id at 384.

ployee was hired to do and what rights, "expressed or implied," the employee had given to the employer.<sup>215</sup> In case of doubt, such as "[w]here the employer and the employee both claim the invention[,] the presumption is prima facie in favor of the employer."<sup>216</sup> This presumption in favor of employer ownership was prescriptive rather than descriptive. In one appeal from a Patent Office interference proceeding,<sup>217</sup> the District of Columbia court had said that there was a presumption that the employer rather than the employee was the inventor, but, as we have seen, there was no similar presumption in the shop right, hiring-to-invent, and assignment contract cases.<sup>218</sup> What the article reflects, however, is the typical formalist confidence that the emerging Langdellian science of contract law could bring organization to the apparent disorder in the caselaw in this area. Yet the law of contracts that the author applied to the phenomenon of employee-inventors was the formal, will-theory, pro-employer version of contract law that, as we will see, courts applied everywhere *but* to employee-inventors.

Thirty years later, the law of employee-inventors was well-developed as a branch of the law of employment contracts, but the caselaw remained in disarray and contained apparently inconsistent outcomes. The lawyers' enthusiasm for contract law as a great clarifying force, however, remained undimmed. The author of an article in the early 1930s concluded that the "vexed question" of employee ownership of inventions, on which the cases were "far from harmonious," had at last been clarified by the courts' recent determination that the question of ownership "in all such cases is relatively simple, being that of the ordinary contractual relation of Master and Servant, or employer and employee."<sup>219</sup> The Supreme Court's emphatic assertion in 1933 that the shop right arose from the employment contract,<sup>220</sup> and its vigorous pro-employer restatement of the principles of contract in-

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<sup>215</sup> *Id.* at 385.

<sup>216</sup> *Id.* at 386 (emphasis removed), citing *Miller v Kelley*, 18 DC App 163 (1901).

<sup>217</sup> "An interference is a proceeding the object of which is determination of priority in invention." Peter D. Rosenberg, *Patent Law Basics* § 10.03[1] at 10-34 (Clark, Boardman, Callaghan 1992). It allows one who claims to have been the first inventor of a patentable idea to challenge, on the grounds of priority of invention, the issuance of a patent to another.

<sup>218</sup> *Miller*, 18 DC App at 170. See note 127 and accompanying text.

<sup>219</sup> Henry C. Workman, *Rights of Employers and Employees in Inventions Made by the Latter*, 20 ABA J 538, 538-39 (1934).

<sup>220</sup> See text accompanying notes 120-21 (discussing *Dubilier*).

terpretation applicable to employee invention cases,<sup>221</sup> clearly placed contract concepts in ascendance.

The rising significance of contract reflected not only a change in legal discourse, but also a change in actual practice in the workplace. As firms grew in size, as they began to invest in research and development and as personnel management became increasingly organized and bureaucratized, employers began to be more systematic in their handling of employee-inventors.<sup>222</sup> Employers increasingly required that all employees who were likely to invent sign agreements to assign to the employer any inventions they might make.

#### A. Early Hostility Toward Contracts Assigning Invention Rights, 1860-1920

The most striking characteristic of the early cases involving contracts assigning future inventions to one's employer was the courts' hostility toward them. The courts initially were reluctant to find that such an agreement existed unless the evidence was clear, and when an agreement did exist, most courts construed it strictly against the employer. Although by 1855 the law was settled that contracts to assign patents were enforceable,<sup>223</sup> at least outside the employment context, courts used a variety of rules of interpretation to make employees' pre-invention assignment agreements difficult for employers to enforce.

This hostility existed in spite of the uncontroversial provision, in the Patent Act since its inception, that patents were assignable.<sup>224</sup> Courts regarded as permissible and sensible that a patentee would assign his patent to someone and then work with the assignee to manufacture and sell the patented item.<sup>225</sup> The earliest reported cases about such arrangements involved partnerships; thus the legal framework was established as a phenomenon of patent law, or the law of partnerships, not as an as-

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<sup>221</sup> See text accompanying notes 201-05 (discussing *Standard Parts*).

<sup>222</sup> See text accompanying notes 116-19.

<sup>223</sup> The Supreme Court held in *Kinsman v Parkhurst*, 59 US 289, 293 (1855), that a patentee's agreement to assign an existing patent to another, to manufacture the patented invention on behalf of the other, and to share the profits was a valid contract not in restraint of trade. The Court also held in *Littlefield v Perry*, 88 US (21 Wall) 205 (1874), that contracts to assign future inventions were enforceable, at least in connection with an assignment of an existing patent.

<sup>224</sup> Patent Act of 1793 § 4, 1 Stat 318, 322. See 16 US (3 Wheat) App n ii 655, 667 (1818) (appendix written by Justice Story discussing assignability of patents). See also *Littlefield*, 88 US (21 Wall) at 214-15 (citing cases and discussing the Patent Act).

<sup>225</sup> See, for example, *Kinsman*, 59 US at 293-94.

pect of the law of master and servant.<sup>226</sup> By the late nineteenth century, when courts began to face contracts by employees to assign patents to their employers, the assignability of patents and the enforceability of pre-invention assignment agreements were well-established aspects of the law and business of patent. Although the Patent Act imposed a variety of procedural requirements on patent assignments,<sup>227</sup> courts enforced, under a variety of equitable doctrines, assignment agreements that did not comply with the statutory requirements.<sup>228</sup> Thus, when courts first confronted employee-employer patent assignment agreements, there was an established tradition of enforcing assignments.

The hostility toward contracts assigning employees' future patents was articulated most pointedly in *Aspinwall Manufacturing Co v Gill*,<sup>229</sup> an early and influential federal circuit court case involving an inventor who assigned his patent to a manufacturing firm and then went to work for the firm making the product. The contract required that he assign future improvements to the main patent, and the court enforced the agreement as reasonably necessary to protect the purchaser's interest in the main patent. Although the court enforced the agreement, Justice Bradley, sitting as a circuit judge, suggested that such contracts must be limited. "A naked assignment or agreement to assign,—in other words, a mortgage on a man's brain, to bind all its future products,—does not address itself favorably to our consideration."<sup>230</sup> This metaphor captured the fancy of many judges, who cited the case as support for various rules construing assignment agreements narrowly.<sup>231</sup>

Courts developed essentially two strategies for declining to enforce employees' assignment agreements. First, they would decline to find the existence of an agreement to assign in the ab-

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<sup>226</sup> See, for example, *Slemmer's Appeal*, 58 Pa 155, 166-67 (1868).

<sup>227</sup> Under the Patent Act, assignments were supposed to be in writing and recorded with the Patent Office within a specified time after the alleged assignment. Patent Act of 1836 § 11, 5 Stat 117, 121. There were limits on the types of interests that could be assigned. See *Gayler v Wilder*, 51 US (10 How) 477, 494-95 (1850) (discussing rights of patent assignees and licensees to sue for infringement); *Brooks v Byam*, 4 F Cases 261, 267-71 (Cir Ct D Mass 1843) (limiting divisibility of licenses in patents); *Blanchard v Eldridge*, 3 F Cases 624, 624-25 (Cir Ct E D Pa 1849) (limiting patent interests that may be assigned); *Potter v Holland*, 19 F Cases 1154, 1157-58 (1858) (explaining generally interests in patents that may be transferred and the rights the transferee acquires).

<sup>228</sup> See, for example, *Burr v De La Vergne*, 102 NY 415, 7 NE 366, 368-69 (1886) (recognizing oral assignment even though statute required it to be in writing); *Blakeney v Goode*, 30 Ohio St 350, 357-61 (1876) (same).

<sup>229</sup> 32 F 697 (Cir Ct D NJ 1887).

<sup>230</sup> *Id* at 700.

<sup>231</sup> See, for example, *Wege v Safe-Cabinet Co*, 249 F 696, 705 (6th Cir 1918) (using the metaphor, although finding it not true in the case).

sence of a clear, written contract. Second, even when there was a written contract, the courts would construe the coverage of such agreements narrowly against the employer so as to exclude all inventions that were either not directly related to the employee's work or not clearly made during the term of the contract.

Notwithstanding the enforceability of patent assignments generally, courts were from the start suspicious of employer claims that employees had made such oral agreements. Among the earliest reported decisions on the issue was the Pennsylvania Supreme Court's 1868 opinion in *Slemmer's Appeal*,<sup>232</sup> which determined that one partner's invention of an oil refining process was the property of the inventing partner alone, and that all the evidence that he made the invention in conducting partnership business gave the other partners only a license, not an ownership interest. The decision rested mainly on a factual determination about the nature of the parties' understanding. Nevertheless, it suggested a difficult standard for establishing an enforceable contract to assign ownership, because it found decisive the inventor-partner's testimony that there was no such agreement.

A similar reluctance to recognize an employment agreement to assign a patent appears in the first published Massachusetts decision to address a written contract assigning an employee's future patents, *Hopedale Machine Co v Entwistle*.<sup>233</sup> A machinist under a one-year written employment contract agreed to assign to his employer all inventions made during the employment. After the expiration of the one-year contract, the employee continued to work and eventually made the invention in question.<sup>234</sup> The Massachusetts Supreme Judicial Court concluded that the obligation to assign the inventions expired with the written contract. The court rejected the contention that the parties had treated the written contract as if it were still in effect:

[I]t is not important, in an action upon it, that it has been treated since as existing by acts on the part of Entwistle which recognized it, or that oral statements have been made by him that he was bound by it. They could not thus give it efficiency. To hold otherwise would be to hold that a written contract which by its terms had expired might still exist as such.<sup>235</sup>

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<sup>232</sup> 58 Pa 155, 166 (1868). *Slemmer's Appeal* is discussed in note 70.

<sup>233</sup> 133 Mass 443 (1882).

<sup>234</sup> *Id* at 443-44.

<sup>235</sup> *Id* at 444.

Another example of judicial unwillingness to find an employee had contracted to assign his patent was *Eustis Manufacturing Co v Eustis*,<sup>236</sup> an 1893 decision of the New Jersey Court of Chancery. The contract in that case obligated the employee to "give the said company the benefit of any and all patents for cooking utensils made by or issued to him during the term of his office and employment in said company . . . ."<sup>237</sup> The court construed this language to grant a license only, not outright ownership.<sup>238</sup>

Perhaps the most widely cited case to rule that a contract to assign must be express and must be established on the basis of clear evidence is *Pressed Steel Car Co v Hansen*,<sup>239</sup> a Third Circuit decision from 1905. Hansen had started his career with the plaintiff firm as a \$6 a week draftsman, and wound up as the chief engineer in charge of the engineering, mechanical, and manufacturing departments. He was highly compensated; his salary rose from \$4,000 per year in 1900 to \$10,000 a year in 1902, which was a great deal of money in those days. There was no written employment agreement. The employer alleged that the parties had an oral contract that Hansen would assign all patents to the firm, but Hansen denied it. The district court found the testimony on this point in conflict. Both the district court and the court of appeals decided that the alleged assignment agreement could not be enforced because its existence had not been clearly proven.<sup>240</sup>

It would be a mistake to think that the courts' unwillingness to enforce assignment agreements they found to be vague was simply an application of the general rule against awarding spe-

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<sup>236</sup> 51 NJ Eq 565, 27 A 439 (1893).

<sup>237</sup> 27 A at 442.

<sup>238</sup> Id at 442-43. Yet another case establishing a high threshold for proving an assignment contract was *Hale & Kilburn Manufacturing Co v Norcross*, 199 Pa 283, 49 A 80 (1901). The employer alleged that there was an oral contract by which the employee agreed to use "his inventive faculties" to improve the car seats his employer manufactured and to "assign all [his] new constructions or improvements" to the firm. Because of the conflicting testimony of the witnesses about the nature and existence of the alleged agreement, the court refused to enforce it, explaining that "[s]pecific performance of this contract could be decreed only after its existence had been shown by clear and precise evidence." 49 A at 83-84.

<sup>239</sup> 137 F 403 (3d Cir 1905).

<sup>240</sup> *Pressed Steel Car Co v Hansen*, 128 F 444, 444-46, 453 (W D Pa 1904), affd, 137 F at 405-07. Fifteen years later, the Pennsylvania Supreme Court still adhered to a rule of construction hostile to such contracts. "[W]here the product of an inventive mind is sought to be appropriated under an agreement to assign to another, the language of the agreement must be clear and show an unmistakable intention that the particular matter covered by the invention or patent is within the intention of the parties." *White Heat Products Co v Thomas*, 266 Pa 551, 109 A 685, 686 (1920) (declining to order assignment to employer).

cific performance of contracts that were vague or indefinite.<sup>241</sup> The general rule about specific performance was filled with exceptions that would have encompassed employees' assignment agreements, yet courts never mentioned these exceptions. Outside of this context, a court would refuse to order specific performance only where the contract was so vague or indefinite that the court was unable to discern what the defendant needed to do.<sup>242</sup> Additionally, courts often would supply missing terms by reasonable inference.<sup>243</sup> The agreements to assign employee inventions that courts declined to enforce specifically were not so vague or indefinite as to be unenforceable under the traditional rule. The uncertainty in these cases was not about the terms—what invention, when to assign it—but rather about whether the contract existed at all.<sup>244</sup> Moreover, the courts seemed no more inclined to grant a damages remedy than to order assignment, so the rule declining enforcement of assignment agreements was not just the equity court's reluctance to order specific performance.<sup>245</sup> The rule was essentially a presumption against the existence of a contract, not simply a rule about specific performance. It was a rule for employees' patent assignment agreements, not for all contracts.

Among the earliest of the second category of cases—construing an agreement strictly against the employer—was *Joliet Manufacturing Co v Dice*,<sup>246</sup> decided in 1883. The court stretched to construe a contract in favor of an employee so as to avoid assignment. The contract required the employee to “work for the best interest of the company in every way that he can, and in

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<sup>241</sup> See, for example, *Ham v Johnson*, 55 Minn 115, 56 NW 584, 584-85 (1893) (denying specific enforcement of an executory contract to convey land because the lots to be conveyed were not specifically described); James L. High, 2 *A Treatise on the Law of Injunctions* § 1106 at 1091-92, § 1109 at 1095 (Callaghan 4th ed 1905) (stating that contracts must be complete for court to grant specific performance); John Norton Pomeroy, *A Treatise on the Specific Performance of Contracts* § 145 at 376-79 (Banks 3d ed 1926) (same).

<sup>242</sup> See, for example, *Work v Welsh*, 160 Ill 468, 43 NE 719, 721 (1896) (granting specific performance of contract to convey land, despite absence of sale price); *Mudgett v Clay*, 5 Wash 103, 31 P 424, 426 (1892) (same).

<sup>243</sup> See, for example, *Lester Agricultural Chemical Works v Selby*, 68 NJ Eq 271, 59 A 247, 250 (1904) (granting specific performance of contract to sell land; supplying missing price term by appraisal of market value); *Lawson v Mullenix*, 104 Md 156, 64 A 938, 943 (1906) (granting specific performance of contract to convey land; supplying missing time for performance with reasonable time).

<sup>244</sup> See, for example, *Slemmer's Appeal*, 58 Pa at 166; *Eustis Manufacturing Co*, 27 A at 441.

<sup>245</sup> See, for example, *Conway v White*, 9 F2d 865, 866 (2d Cir 1921) (“It is of course well-settled law that a contract to sell or transfer a patented right, like a contract to sell real estate, may be specifically enforced. The reason is that there is no accurate measure of damages, and a pecuniary payment is inadequate relief.”).

<sup>246</sup> 105 Ill 649 (1883).

whatever way such aid can be given shall belong to the company, that is, improvements (previous to this date not included) that he may make or cause to be made."<sup>247</sup> The employee had been hired to manufacture harvesting equipment and had patented a piece of equipment in his own name. The court stated the "general rule" that "where a mechanic, in laboring for an employer in the construction of a machine, invents a valuable improvement, the invention is the property of the inventor and not that of the employer."<sup>248</sup> Noting that a hiring for the specific purpose of inventing might give ownership of the invention to the employer, the court said: "But the law inclines so strongly to the rule that the invention shall be the property of its inventor, that nothing short of a clear and specific contract to that effect will vest the property of the invention in the employer, to the exclusion of the inventor."<sup>249</sup> Pointing out that the contract required the employee to manufacture "shellers and mowers," the court concluded that the employee's invention—a "check rower"—was not within the scope of the contract.<sup>250</sup> Similarly, in *Hildreth v Duff*,<sup>251</sup> a candy manufacturer, Hildreth, hired a mechanic to construct machines for "sizing, shaping, cutting, wrapping and packing" molasses candy.<sup>252</sup> The contract provided that the mechanic would give his employer "the full benefit and enjoyment of any and all inventions and improvements, which I have made or may hereafter make relating to machines or devices pertaining to said Hildreth's business."<sup>253</sup> The court concluded that because Hildreth was in the business of making candy, not machines, the contract provided for him only to use the machines, not to own them outright.<sup>254</sup>

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<sup>247</sup> Id at 650.

<sup>248</sup> Id at 651.

<sup>249</sup> Id at 651-52.

<sup>250</sup> Id at 652.

<sup>251</sup> 143 F 139 (Cir Ct W D Pa), *affd*, 148 F 676, 677 (3d Cir 1906).

<sup>252</sup> 148 F at 677.

<sup>253</sup> Id.

<sup>254</sup> 143 F at 141. See also *Hazen Manufacturing Co v Wareham*, 242 F 642 (6th Cir 1917) (construing narrowly a contract granting a license to the employer).

*Johnson Furnace & Engineering Co v Western Furnace Co*, 178 F 819, 821-22 (8th Cir 1910), was a similar case construing narrowly against the employer a contract to assign. Parkinson, the organizer of the defendant company, had previously been employed as the manager of the plaintiff firm. While so employed, he invented an improved furnace grate. Shortly thereafter he quit his job and applied for a patent on his grate. The plaintiff firm, his former employer, alleged he was obligated to assign the patent, both by the terms of his oral employment agreement and under a written contract for which he was something of a third-party beneficiary. The court rejected the firm's contention, finding that his hiring was "general" and did not cover "the fruit of" his inventive genius. The court also found that the contract did not cover Parkinson's inventions, but only Parkinson's em-



These were but a few of the numerous cases involving assignment agreements that courts construed in favor of the employee rather than force the employee to assign a patent. Others include a 1914 Second Circuit case that construed narrowly a contract by which an employee agreed to grant his employer an exclusive license to all future inventions "devised or acquired by him with relation to elevators and their appliances . . . ."<sup>255</sup> The court held the provision covered inventions related to plunger elevator control, but not inventions related to drilling holes for plunger elevators, oil wells, and artesian wells.<sup>256</sup> Adopting the popular metaphor from *Aspinwall*, the court opined that the employer's proposed construction of the agreement "would be an extremely harsh one; it might even be found unconscionable, for it mortgages his inventive faculties to complainant for an indefinite period subsequent to employment, in relation not only to elevators of the 'plunger' type, but to steam and electric elevators as well."<sup>257</sup> The next year, a federal court in Pennsylvania construed narrowly a contract assigning the employee's future inventions. The court held the provision covered generators and motors, which the employer manufactured, but not devices for controlling them, which the employer did not manufacture and instead purchased for use on its motors.<sup>258</sup>

There were too many cases granting employee-inventors the benefit of the doubt in contract interpretation to regard these as exceptional. Nor can they be understood to rest on any rule other than simple suspicion of employer efforts to divest employees of their inventions. Although the cases were not anomalous, they were not the only trend in the law. A significant minority of courts were willing to enforce these same sorts of contracts. Over time, the minority view became dominant.

#### B. Willing Enforcement of Assignment Agreements, 1895-1930

At the end of the nineteenth century, the number of reported decisions enforcing employee patent assignments began steadily to increase. In the first decade of the twentieth century, reported opinions found contracts to assign future inventions supported by

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ployer's inventions. *Id.* at 823.

<sup>255</sup> *Standard Plunger Elevator Co v Stokes*, 212 F 893, 896 (2d Cir 1914).

<sup>256</sup> *Id.* at 897.

<sup>257</sup> *Id.* at 896.

<sup>258</sup> *Triumph Electric Co v Thullen*, 225 F 293, 296-97 (E D Pa 1915). Other cases construing assignment agreements narrowly so as to protect employees include *National Cash Register Co v Remington Arms Co*, 242 NY 99, 151 NE 144, 145 (1926); *White Heat Products*, 109 A at 686-87.

sufficient consideration on the basis that the employee gained a job, had access to valuable knowledge, and was paid.<sup>259</sup> As to the notion that such contracts were against public policy, courts regarded contracts to assign future improvements related to the employer's business as reasonably necessary to protect the employer's investment in the business.<sup>260</sup> And, as to the problem of finding the terms sufficiently definite, courts found the requisite definiteness in express written contracts, and even held exchanges of letters to constitute an agreement.<sup>261</sup> Courts also upheld related contracts, such as confidentiality agreements.<sup>262</sup>

Among the earliest and most cited cases was *Hulse v Bonsack Machine Co.*,<sup>263</sup> in which the court found wanting many of the arguments against enforcement of such contracts.<sup>264</sup> It is a good example of a trend that was manifested in other cases too numerous to discuss. Hulse, a mechanic, was employed by the Bonsack Machine Company, a manufacturer of cigarette-making machines, under a written contract that claimed "for the exclusive use of the said company" any "improvement in cigarette machines" the employee might develop during his employment "or at any time thereafter."<sup>265</sup> Hulse did not want to assign an invention he made after leaving Bonsack's employment, but the court concluded the contract compelled it. The opinion's description of the equities of the situation suggested that the judge viewed the main problem in the case as being how to protect the firm's research program from the depredations of this overly enterprising

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<sup>259</sup> See, for example, *Mississippi Glass Co v Franzen*, 143 F 501, 506-07 (3d Cir 1906) (holding employment, training and salary to be sufficient consideration); *Brown Perfection Tube Co v Brown*, 233 F 676 (2d Cir 1916) (enforcing agreement to assign inventions against employee whose original patent was the basis of the company's business; employee apparently was founder of company); *Detroit Lubricator Co v Lavigne Manufacturing Co*, 151 Mich 650, 115 NW 988, 990-91 (1908) (holding that employment is sufficient consideration for agreement to assign all inventions "which might result from . . . employment in the nature of machinery, tools, or devices, to be used in connection with [employer's] business"); *Parker Rust-Proof Co v Allen*, 231 Mich 69, 203 NW 890, 890-91 (1925) (holding that employment is sufficient consideration for agreement to assign certain inventions).

<sup>260</sup> See, for example, *Wege*, 249 F at 704-05 (rejecting the criticism that an agreement to assign future inventions after termination of employment is "a mortgage on a man's brain" because "if such safeguard were not available, the inventor might through knowledge obtained in his employment evade the contract [to assign inventions during employment] later and render it valueless") (citations omitted).

<sup>261</sup> See, for example, *Portland Iron Works v Willett*, 49 Or 245, 89 P 421, 423-24 (1907) (letters); *Fullman v Steel City Electric Co*, 2 F2d 4, 5 (3d Cir 1924) (express contract); *Conway*, 9 F2d at 866-67 (express contract).

<sup>262</sup> See *Thibodeau v Hildreth*, 124 F 892, 893 (1st Cir 1903) (enforcing agreement requiring employee to preserve employer's trade secrets and to assign inventions).

<sup>263</sup> 65 F 864 (4th Cir 1895).

<sup>264</sup> Id at 867.

<sup>265</sup> Id at 866.

employee.<sup>266</sup> The court found Hulse's salary to be sufficient consideration for the contract because the employment gave the inventor the time, opportunity, and materials necessary to invent. The court rejected the contention that the pre-invention assignment contract was unconscionable.<sup>267</sup>

The court also rejected the argument that contracts assigning rights to all future inventions were against public policy because they restrained trade or stifled invention. The public interest, thought the judge, lay in promoting innovation, which could be best achieved by protecting the firm, not the employee: "Here we have the case of an ingenious man, without opportunity of developing his talent, and struggling under difficulties, enabled by this contract to secure employment in a large and prosperous corporation, where he could give his inventive faculties full play."<sup>268</sup> Without the contract, the employee would never have been hired. "Then, in all human probability, the public would have lost the benefit of his discovery. In this point of view, a contract of this character cannot be said to be against public policy."<sup>269</sup> The case rebuffed all the arguments that were used in that era to challenge invention assignment agreements. More interesting, its rationale is plainly instrumental; the court thought it was promoting invention, just as did earlier courts who rejected assignment agreements.

The *Hulse* court's willingness to enforce assignment agreements was premised on an early view that employment provided opportunities for invention. That early sense evolved over the course of twenty years into a recognizably modern understanding of the collective nature of research and development. The modern perspective is fully articulated in the Seventh Circuit's 1911 decision in *National Wire Bound Box Co v Healy*,<sup>270</sup> which held that the sole stockholders of a start-up company had a fiduciary duty to assign to the corporation patented improvements on the com-

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<sup>266</sup> "The improvement would be his own idea. But it owed its suggestion and origin, its progressive development and perfection, to the business, the practical working, the opportunity afforded by the company. When, therefore, the company, taught by costly experience, determined to protect itself from the discovery and improvements by its own servants, it did a natural and reasonable thing; and, when it protected itself by a covenant in advance of any employment with those seeking its service, it did a fair thing." Id at 867-68.

<sup>267</sup> Id.

<sup>268</sup> Id at 868.

<sup>269</sup> Id.

<sup>270</sup> 189 F 49 (7th Cir 1911).

pany's product that they developed after the company terminated their employment.<sup>271</sup>

The opinion justified a broad duty to assign with a lengthy explanation of the collective nature of invention.

An invention is not something that, but for the particular inventor or inventors, would not have been. Inventions come along as the discovery of gas deposits come along—the contribution of some particular person to the world's knowledge—but if not by that person, then, in the course of time, and usually in a very short time, by some one else.<sup>272</sup>

The company should justly own the individual's patents because the employee had only an idea for a technological advance; the firm created the value in that idea. The court explained:

[T]he exploration of the laws of nature and mechanics, for something that will aid a specific commercial or business end, practically and commercially is not different from explorations for mineral or gas deposits to a like commercial end. Neither has any value until it is obtained. Both create a value that did not exist before they were obtained.<sup>273</sup>

Reasoning that invention was a long and arduous endeavor of many contributors, not the product of a stroke of individual genius, the *Healy* court concluded that agreements to assign future inventions ought to be treated no differently than agreements to assign any other property that someone may acquire in the future.<sup>274</sup> Finally, the court invoked the public interest in the systematic advancement of technology, which would be best served by giving corporations control over employee patents: "Protection for the future requires that inventions already controlled be not undermined and diverted by other inventions along the same line."<sup>275</sup>

The special rules for interpreting employee-inventors' assignment contracts met their death in the Supreme Court's decision in *Standard Parts*. The case involved a written employment contract between a manufacturer of automobile springs for Ford Motor Company and William Peck, a designer of machinery. The contract obligated Peck "to devote his time to the development of

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<sup>271</sup> Id at 54-56.

<sup>272</sup> Id at 55.

<sup>273</sup> Id at 56.

<sup>274</sup> Id at 56-57 (distinguishing earlier pro-employee cases by emphasizing that employment contract in *Healy* expressly addressed the topic).

<sup>275</sup> Id at 55.

a process and machinery for the production of the front spring now used on the product of the Ford Motor Company.<sup>276</sup> Relying on established caselaw, the Sixth Circuit interpreted the contract simply as a hiring to make improvements, not an agreement to transfer ownership of the invention to the employer. The court said that in order for a contract to divest the employee of the entire ownership of the invention and the possibility of future profit from it, "that result ought to be expressed in the clearest and plainest words."<sup>277</sup>

The Supreme Court disagreed. Based on the contract provision requiring the employee to develop a process and a machine, the Court thought the product was the property "of him who engaged the services and paid for them . . ."<sup>278</sup> To interpret the contract as allowing Peck any property right in the invention, the Court thought, would "take from the company the advantage of its exclusive use and subject the company to the rivalry of competitors."<sup>279</sup> Peck's notion, which accorded the employee-inventor an almost inalienable property right, would be unfair to the employer. The Court explained:

Peck . . . asserts, though stimulated to services by the Hess Company and paid for them, doing nothing more than he was engaged to do and paid for doing, that the product of the services was so entirely his property that he might give as great a right to any member of the mechanical world as to the one who engaged him and paid him—a right to be used in competition with the one who engaged him and paid him. . . . We cannot assent to this.<sup>280</sup>

In no uncertain terms, *Standard Parts* aimed to put an end to the whole line of cases in which courts had construed any ambiguity about assignment of invention rights in favor of the employee. *Standard Parts* made clear that a hiring to invent conveyed to the employer not only a license to use the invention but also the entire ownership interest in the invention. The Court also left no doubt that contracts requiring employees to assign existing or future inventions were no longer to be construed in favor of the employee.<sup>281</sup> The Court did so in terms that evidenced a

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<sup>276</sup> 264 US at 59.

<sup>277</sup> *Peck v Standard Parts Co*, 282 F 443, 446 (6th Cir 1922).

<sup>278</sup> 264 US at 59.

<sup>279</sup> *Id* at 60.

<sup>280</sup> *Id*.

<sup>281</sup> Modern cases from many states have stated that contracts assigning inventions, even inventions developed after the termination of employment, may be enforced so as to protect the employer. See, for example, *Ingersoll-Rand Co v Ciavatta*, 110 NJ 609, 542 A2d

complete rejection of the Romantic notion of the law protecting the hero inventor. It also represented a wholehearted embrace of the master-servant rule that the master presumptively contracts for all the benefits of the servant's work. And the Court obviously thought it did so for the greater good of American technological development.

The state courts neither immediately nor unequivocally abandoned the pre-*Standard Parts* habit of construing employee patent assignment agreements in favor of the employee-inventor. In the ensuing decades, the unruly common law process continued to produce decisions reflecting various points of view on a spectrum between hostility and indulgence toward such contracts. Nevertheless, the tide clearly turned against employee-inventors. Courts construed ambiguous written contracts to find an employee obligated to assign inventions and, unlike before, found implied contracts to assign based on common practice.<sup>282</sup>

As recently as 1991, for instance, a Pennsylvania federal court decision analyzing the rights of a professor who developed the acne treatment Retin-A discussed seventy years of Pennsylvania law on employee-inventors. Although noting the old deci-

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879, 892, 895 (1988) (explaining that employer has an interest "in protecting confidential information, trade secrets, and, more generally, its time and expenditures in training and imparting skills and knowledge to its paid work force"; holding that agreement did not apply to invention in question, but only because no plausible liberal construction could achieve that result); *Cubic Corp v Marty*, 185 Cal App 3d 438, 229 Cal Rptr 828 (1986) (enforcing an assignment agreement over employee's objection that it did not cover the invention in question, was unconscionable, and was not supported by sufficient consideration). Courts will, however, examine the reasonableness of a contract's time limits and of the subject matter of inventions covered. See *Ingersoll-Rand*, 542 A2d at 888-92 (collecting cases).

To the extent that there remain special rules for employees' pre-invention assignment agreements, most of them are the product of state statutory reforms. See, for example, Cal Lab Code § 2870 (West 1989 & Supp 1998) (stating that an agreement requiring an employee to assign inventions developed without using employer resources is, with significant exceptions, unenforceable).

<sup>282</sup> See *Marshall v Colgate-Palmolive-Peet Co*, 175 F2d 215, 217 (3d Cir 1949) (finding implied contract to assign patent based in part on hiring to invent where there "was a custom . . . for employees of the defendant to assign inventions to it"); *Teets v Chromalloy Gas Turbine Corp*, 83 F3d 403, 408 (Fed Cir) (finding implied contract to assign), cert denied, 117 S Ct 513 (1996); *Total Containment Inc v Environmental Products Inc*, 23 USPQ 2d 1305, 1306 (E D Pa 1992) (enforcing express contract to assign); *Fessler v Permachem Corp*, 144 NYS2d 232, 234 (NY S Ct 1955) (enforcing express contract to assign based on written employment agreement); *A&C Engineering Co v Atherholt*, 355 Mich 677, 95 NW2d 871, 875 (1959) (finding complaint adequately averred employer ownership of invention although only an implied contract); *Andreaggi v Relis*, 171 NJ Super 203, 408 A2d 455, 464 (1979) (enforcing express contract to assign); *Mainland Industries, Inc v Timberland Machines and Engineering Corp*, 58 Or App 585, 649 P2d 613, 616 (1982) (enforcing oral agreement to assign patent); *Cubic Corp*, 229 Cal Rptr at 833 (enforcing express contract to assign).

sions' reluctance to find contracts to assign inventions, the court concluded that a jury could find, based on a policy manual, an unsigned form patent assignment contract, and conflicting evidence of past practice, that the professor had an implied contract to assign all his inventions to the University.<sup>283</sup> After *Standard Parts*, courts seldom invoked presumptions against the enforceability of assignment contracts; most of the cases that declined to enforce a contract did so simply because the existence of any agreement had not been proven, not because of ambiguity in its terms.<sup>284</sup>

Over the course of the last seventy-five years, employee contracts allocating ownership in employee ideas have been assimilated into the law of contracts generally and employment contracts in particular. Courts decline to enforce an assignment if they find no contract to exist, just as they decline to enforce any other alleged contract unless the contract can be proved. But the evolving law of implied-in-fact contracts has proven to be a useful tool for employers to invoke in the absence of an express contract and nothing in the law of implied contract reflects the nineteenth century concern with protecting against "a mortgage on the workman's brain."

### CONCLUSION

In an era when judges and treatise writers referred to and obviously regarded most employees as servants, employees who invented were usually neither so called nor so treated. Even as industrialization undermined the independence of artisans and the law came to deem knowledge and control of the production process to be the right of the firm rather than the prerogative of skilled labor, employees retained significant legal rights to their ideas if they were embodied in patented inventions. The courts' perception of the inventive employee's class position certainly made a difference in how the employee-inventor was treated. The doctrines described here called for extremely particularized, fact-intensive inquiry, where perception of whether the employee was

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<sup>283</sup> *University Patents, Inc v Kligman*, 762 F Supp 1212, 1220-29 (E D Pa 1991).

<sup>284</sup> See, for example, *Bandag, Inc v Morenings*, 259 Iowa 998, 146 NW2d 916, 923 (1966); *Gemco Engineering & Manufacturing Co, Inc v Henderson*, 82 Ohio App 324, 77 NE2d 742, 743-44 (1947). In one case, in which the court noted the desirability of construing such contracts strictly, nevertheless the court ruled that the employee had to assign the patents in question. *US Colloid Mill Corp v Meyers*, 6 F Supp 283, 287-88 (S D NY 1934) ("Contracts whereby one man sells products of his mind to somebody else are to be rather strictly construed. Otherwise we should run into the difficulty of a man mortgaging his own mind, a thing which is to be avoided. Otherwise also we should run into the difficulty of hampering the development of inventions.").

a man of "inventive genius" or a "mere mechanic" appeared to compel the legal conclusion that followed. If the judges perceived the inventive employee as a man like Eli Whitney or Thomas Edison, they found it hard to treat him like a servant. However, once employer lawyers disabused judges of the inventor-hero image in favor of the modern vision of inventive employees working in a big, employer-financed laboratory, the law began to change.

It would be a vast oversimplification to suggest that Taylorism<sup>285</sup> and the change in the cultural perception of invention from the inventor-hero to Bell Labs were the only catalysts of change. The influence did not go in one direction from culture to law; rather it went from culture to law and then back again. Legal categories also affected cultural conceptions. The Patent Office's bureaucratic insistence on the existence of an individual inventor no doubt influenced the way that employers and employees perceived who had been the inventor in fact. Moreover, the rise of contract in the late nineteenth century certainly changed the way employers did business with their workforce. Additionally, the spread of the corporate form of business ownership emphasized for courts the corporate, or collective, nature of work and idea ownership.

This is an area where law and culture cross-fertilized one another in their creation of and reaction to social class. If a judge could not see an inventive man as part of the working class, the judge vastly increased the employee's chances of becoming an entrepreneur if he was not one already. Once judges began to see inventive employees as employees first and inventors second, it became much harder for the employee to capitalize on his ideas.

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<sup>285</sup> See text accompanying note 109.